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SYSTEMATIC METHODOLOGY

DESIGNED TO

*RATIONALIZE AND HARMONIZE
TEACHING PROCESSES*

BY

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PREFACE.

THIS book is intended for that great and growing body of earnest teachers and students of education who believe that there is an underlying philosophy of teaching. It contains little that will interest such as are in search of ready-made materials and attractive devices for use in the class-room, to relieve the teacher from the labor of thoughtful preparation.

The author has aimed to furnish a systematic treatment of the problems of teaching. He does not claim that it is an exhaustive treatment, but he believes it to be one without contradictions, and with sufficient emphasis upon essentials to make those who master it, and who possess the elements of a proper personality, able to teach with an intelligent regard for the rationale of their art.

To those who are not inclined to pursue the study of the problems of teaching into the realm of their application, but who are striving to master the various phases of the philosophy of education, from the standpoint both of the learner and of the truth to be employed, **Parts I and II** are commended.

Those who desire to turn aside from a consideration of the mind, as treated in the various psychologies, and to devote their time to a more direct study of the problems that arise in presenting the different branches of the curriculum, will find these dealt with, in both their broader and their more specific aspects, in **Parts II and III**.

A. T. S.

MANSFIELD, PA., 1900.



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SYSTEMATIC METHODOLOGY.

INTRODUCTION.

WORKS on teaching abound in which are to be found many and varied recommendations in method, most of which do not rise above the dignity of reasonable devices. As these schemes have been drawn from the experience and observation of successful teachers; as they have been composed of the plans that have "worked" well for the accomplishment of their several ends; and as these ends have been as varied as the mental attitudes of the persons who aimed at them, we have been forced to receive in the name of "Methods" a great mass of inconsistent and sometimes even contradictory items without a show of either unity or completeness. All this has tended to throw the subject of pedagogy into disfavor, and has caused men to hold up to ridicule every effort at systematization even before it is examined.

Still it is the writer's belief that when those who practice the art of teaching learn the conditions involved in it, pedagogy will be found to submit to as great a degree of order as will any of the other applied sciences. He believes also that these conditions can be as fully known as can the conditions for the application of any science which has to do with men in all the variety

which they present, due to differing impulses, opinions, motives, etc. And further, he holds that we do now know enough of the principles involved and of the secrets of their application, to render this subject *systematic and reasonable*, not only in the principles to be announced, but also in the schemes for their application to the several subjects of the school curriculum; and that generalizations in method applicable to one school subject need not be violated forthwith in others, on the ground that the subjects have nothing in common and hence need not be treated as similar.

Two main lines of investigation are necessary in order to render our knowledge of methods rational. We must first study the human mind, not necessarily in its completeness, but sufficiently to bring to light its absolute needs in the act of learning; but, because the human mind is complex, it will be found necessary to treat its several capacities separately, discussing their nature and the means by which they unfold. In the second place, the nature of truth needs to be investigated in order to determine the conditions under which the human mind can comprehend it; and, as the school branches are varied and appear to many to be totally dissimilar, they need to be harmonized and to have their fundamental similarities emphasized. Although these two phases of the study are clearly distinguishable in thought, and we can easily tell when reference is being made to the mind and when it is being made to truth as embraced in the subjects of study, no attempt will be made to keep them distinct throughout the treatment. Whenever it is believed that the discussion of the main

question of pedagogy can be clarified by reference, in the same section, to both the truth and the mind which must apprehend it, they will be combined.

To render this entire discussion more complete and systematic, we must see to it that terms are used throughout with consistency ; we must be careful that no recommendations are given in one connection and violated in another ; and we must make clear to the reader that, instead of geography, reading, grammar, arithmetic, etc., being taught by methods peculiar to each *and totally different from each other*, they all obey certain well-defined fundamental laws applicable to truth in general. They are, therefore, taught alike, their seeming differences being due merely to variations in the application of the law made necessary by the detailed differences in the matters with which we deal. Only when the last-named truth is comprehended can our teaching be made masterful and our appreciation of method become thorough. Till then the highest plane we can reach in school work is that of successful imitators, without a reasonable ground for the acceptance or rejection of any method or device that may be thrust upon our attention. He who teaches well because he was born with a capacity for doing things in this department well, may become a successful teacher, but he alone can become an artistic teacher who comprehends the rationale of his art, and then learns how to perform skillfully the things he knows.

It is an aim of this work to make clear to the reader that all the school studies which have to do with *a body of truth to be comprehended* are capable of being

taught after the same comprehensive plan; that this plan is determined by the requirements of the nature of the truth itself and of the mind which would master it; and that the varieties of so-called "methods" of learning are simply variations of the one comprehensive plan, made necessary by the fact that the truth embraced in one branch of learning is different in kind from that presented in another. Or, more specifically expressed, it is this: generalizations of a given order are to be comprehended only in the light of the appropriate individuals embraced within them. Here we have our one comprehensive plan, or principle of learning. This plan, and not some contrary one, is determined by the necessities of our thinking and by the fact that, in the world of things about which we study, only individuals exist, while generalizations are merely contrivances of man, wrought out for his convenience in mastering the truths concerning this world of real but individual things. The inductive method of teaching formal grammar and the observational method of presenting the subject of introductory geography, are simply two different applications of the above-mentioned fundamental principle of learning, made different by the fact that the data in grammar call for an exercise of thought apart from perception, while the data of introductory geography call for an exercise of thought in perception. Or, again, recognizing the uniformity of mental procedure from a unit or whole to its constituent parts, in the effort at mastery of a single thing, the analytic method of systematic geography, the sentence method in primary reading, and the method which would use a

problem in arithmetic, to be analyzed as the preparatory step for the comprehension of an arithmetical rule, are all found to be but so many different forms under which the one comprehensive law is expressed. The only difficulty in the way of thus applying the above law of analytic mental procedure is found to be that of determining what is the *unit of study* in the several school branches, and hence, where is the point of departure in their systematic mastery. Because this thought is important, and perhaps not without its difficulties, it will receive extended treatment in a separate place and be frequently repeated in its proper connection.

It is another aim of this work to make clear to the learner that there are many school subjects which do not consist of a body of truth to be comprehended, but rather of an art to be acquired (as writing, drawing, vocal expression, etc.), or of a body of materials to be simply stored in the mind (as spelling, the simple facts of history, — in so far as they need to be committed to memory, — the multiplication table and other tables which, upon being comprehended, must be so fixed as to be ready for service, etc.). Neither of the above kinds of studies can be subjected to the treatment required in the case of truth that is to be comprehended, but they must be given a treatment peculiar to their nature. They call for a different form of exercise of the mind, and are not to be thought of as illustrating any of the laws of mental activity required in the mastery of a body of truth. Directions will be given for the learner's help in dealing with such subjects; though, when they occur as parts of a more comprehensive subject, as the

multiplication table in arithmetic, they will be incidentally considered as side issues, rather than in distinct chapters.

Certain terms have already been used, and will be very freely used throughout these pages, and it seems important that we should have at this time a definite statement of their meanings. They are principle, method, and device.

A *principle* in pedagogy is a fundamental truth which is to serve as the basis of method in the teaching art. These principles are formulated from what we know of the human mind and of the fund of truth with which humanity is to be educated. We know nothing of the essence of mind as we know nothing of the essence of matter. Phenomena alone are open to our study. What mind or matter does we may know, but not what either is. When we have discovered the necessary sequences in the actions of human beings, we have learned the principles of human nature — “the constitutional propensities common to the human species.” In so far as these are now known, they may be made to serve as the bases of our various methods of teaching. These principles of the human mind may have differing degrees of generality in their application. Thus, the principle that the mind develops only through its own activity is one of wider application than the principle that the memory is made most wisely strong by being habituated to act according to the rational laws of association. The former of these includes the latter, while, at the same time, it refers to the other faculties or capacities of the human mind as well.

A *method* in pedagogy is a *rational plan* or series of steps for effecting results in teaching. According to Kant, "Method is procedure according to principles."

A method of teaching, then, is procedure in teaching according to the principles of teaching. Whoever regards methods as blind and a study of methods as blinding must be thinking only of an improper study of methods. If viewed in the light of their underlying principles — and this is the only intelligent form of study of methods — they will not destroy individuality nor in any way prevent growth. On the other hand, an intelligent study of methods of teaching, or of any other art, will prevent the narrowness inseparable from the possession of but one idea. Methods, like principles, may have varying degrees of breadth in their application. Thus we have the analytic method of study, which consists in taking units of study and disintegrating them to find the parts or elements of which they are composed. This may be done with a problem, a sentence, a myth, or a social custom. On the other hand, we have the sentence method of studying primary reading, which consists in presenting the sentence at the outset in reading and then proceeding to a consideration of its component parts, — words, and the letters and sounds of which they are composed. This is seen to be simply the analytic method limited in its application to a special department of study, that of primary reading.

A *device* in pedagogy is simply a contrivance for applying a certain method. It shows the teacher's inventive skill in the provision he makes for the needs of individual pupils. To borrow simply the devices of

another would tend to destroy a teacher's individuality ; but to comprehend the methods, which may be the common possession of all teachers, makes possible a fertility of expedients or devices, without at any time violating the underlying principles of a true pedagogy. The only way to give assurance that one will not resort to winning but irrational and conflicting devices is to educate him thoroughly in the principles and methods of his art.

"Method is a way of reaching a given end by a *series* of acts which tend to secure it " ; device refers rather to a single action. We may teach primary reading according to the sentence method, but as a device we may use either the blackboard or a chart. We may teach geography by the analytic method, but whether we shall use a globe, a wall map, or a book in a given lesson is a choice of devices.

In order to make this distinction still clearer, and thus prepare the way for an intelligent study of both the general and the special methods which are to follow, let me express it differently.

1. Generalizations of a given order can be comprehended only in the light of the individuals embraced within them.

2. Words, which are the symbols of things, can become significant only in the light of the things which they symbolize.

3. In teaching, the actual reality of each subject of study should be brought directly before the mind of the learner for the exercise of his powers.

4. Since single things are the only real existences in a world of things, we should proceed, in our study of the

single thing, from the unit, as presented, to its several component parts — or analytically.

5. In the attempt to make generalizations we should proceed from the individual things as presented to us in nature, to their comparative consideration — or inductively.

6. In applying these methods the teacher may use any one of many devices. He may have the children bring to the schoolroom the things to be studied, or he may take the children for a walk over the country; he may provide a separate specimen to be handled by each child, or he may have but one specimen to be used by himself, etc.

The first and second statements may be considered as very general principles, the first based on the nature of the mind and the second on the nature of things. The third is a more specific principle, based upon the first two, and stated with more direct reference to its serving as a guide to teaching. As no thought movement is yet indicated, we have no method. But in the fourth statement is set forth the analytic method, which is applicable to the study of individual things; while in the fifth is set forth the inductive method, which is applicable to the study of generalizations. Both of these are based upon the preceding principles. In the sixth statement reference is made to devices for working according to the above methods. Devices, as well as methods, are rational only when their use is in obedience to the truth of the underlying principles.

One other line of thought should be taken up in order to render this outlook sufficiently full for its purpose.

Pedagogy is in large part a derived science. The being to be educated is dual in his nature, — composed of body and mind. Pedagogy must, therefore, borrow principles from physiology and psychology. But while psychology will furnish us the principles derived from mental activities in general, two other sciences have been developed from the study of man's mental, as distinguished from his bodily, nature. Man is susceptible of moral growth, and, therefore, pedagogy must borrow from ethics. Human thinking has its laws very widely formulated in the science of logic, and hence pedagogy must borrow from that source. But, in each one of these, man may be regarded as an isolated personality, while, indeed, he is a social creature. A man in the midst of men is a very different being from a man in isolation. Entirely alone he is abnormal; it requires society to make possible his best growth. As a fish is created to live in water, so man is created to live in society. This, added to the fact that teaching is done through systems of schools, requires pedagogy to borrow from sociology and the various sciences of government.

But, on the other hand, pedagogy has a wide field in which it is an independent science. The relative values of school subjects, the action of examinations, the effects of co-education, are some of the questions for pedagogy alone to solve.

It is the recognition of this derived nature of so much of pedagogy that enables one to justify a deductive procedure like that employed in this work. The generalizations thus employed at the outset are results of the foundation sciences on which we build. Nor does the

fact that pedagogy is in part an independent science disturb this position, for the average teacher is not expected to become an educational scientist. Expert investigators are making these studies, and the results of their inquiries are set forth in books on methods, to the end that practical teachers may, by obeying them, become artists.

PART I.

NATURE AND DEVELOPMENT OF THE MENTAL FACULTIES.

CHAPTER I.

GENERAL TREATMENT.

THE term "mental faculty" needs a word of explanation before entering upon the conventional list of faculties and the means of cultivating each. The objection is often made that, when one speaks of the faculties of the mind, he teaches that the mind is divided into separate parts, and that each part, called a faculty, acts independently of the other parts. Let it be remembered, then, that the whole mind, or better, simply the mind, is active in whatever form of mental activity is taking place; and that we give to it the different faculty names to indicate the forms of mental activity which *predominate* in the several instances. By a faculty, then, we mean simply the soul's capacity or ability to *do* a distinct kind of work. We may be said, therefore, to have as many mental faculties as there are distinct kinds of work that the mind can perform. A clear analogy may be found in popular usage. If a man is trained to do a certain quality of work in wood, we call him a carpenter; if this same man is trained to do work in paint,

we call him a painter ; if he is trained to do work in stone, we call him a stone mason. Now, evidently, the man, and not a part of him, is carpenter ; the man, and not a portion of him, is painter ; the man, and not a section of him, is stone mason. This man has the capacity to do three kinds of work, and in each instance we give him the name derived from the kind of work in which he is engaged. Following this analogy, we may safely assert that the mind has as many faculties as there are distinct kinds of work revealed to the consciousness of man. Examining himself, then, each man finds that he possesses the ability to get truth, or to *know* ; this capacity is called the intellect. Further examination reveals to man the fact that he has the capacity to experience pleasures and pains, or to have feelings ; this capacity is called the sensibility. Finally he finds that there is within him the ability of *self-direction*, or of action directed to some chosen end ; this capacity is called the will.

Instead of treating the culture of these three broader capacities of the mind, we can gain our ends better by extending the analysis and then studying the means of cultivating each of the sub-divisions — also called faculties — somewhat in detail. Man finds upon examination that he has the power to get truth from things that are present to his mind at the time he studies them. Such knowledge is called presentative knowledge. If this power is exercised in looking within his own mind and learning what is taking place there, it is called inner perception, or self-consciousness. If this power of getting truth from things at first hand is exercised upon

things external to the mind, it is called perception. The avenues through which we can learn directly about a world of things are the senses, — sight, hearing, touch, taste, and smell. Perception is, then, the soul's capacity for getting knowledge of external things immediately through the medium of the senses.

Self-consciousness reveals to man a capacity for getting ideas of things when those things are absent from him. Such knowledge is called representative knowledge. If these items of knowledge are made to appear in the forms in which they were originally acquired, and are then recognized as old acquaintances, it is called remembered knowledge, and the capacity for so acting is called memory. It is not necessary, however, that our knowledge should reappear and remain in the forms in which it was acquired. We have the ability to take these old items and to put them together into new wholes, thus producing mental pictures different from anything we have ever perceived, and perhaps unlike anything that exists in the world of realities. The power of creating such mental pictures is called imagination.

Each of the above powers has to do with individual things considered simply as individuals, and the product is a mental image of a single thing. The element of generalization, or of classification has not yet appeared in the analysis. Self-examination, however, reveals to us an ability to take these products of perception, memory and imagination, and, by comparing them, to derive certain higher and more general forms of knowledge than can be secured through the study of isolated individual things. This process of comparing, sorting, and arrang-

ing the products of the lower faculties we call thinking, and the power we possess of doing this we call thought. The knowledge thus secured is called elaborative knowledge. Psychologists usually distinguish three stages of thinking. There is, first, the formation of the general notion, or concept. The concept is the mental content we have, answering to a class of things, and it is represented in language by common names, such as mountain, boy, animal, square. The power we possess to form such general notions is called conception. So much pedagogical significance attaches to the formation of concepts that we shall devote to it a separate chapter under the heading, "The Notion, or Concept."

The next stage of thinking consists in a comparison of concepts. This process of comparing concepts is called judging, and the product thus reached is called a judgment. In language the judgment is represented by a declarative sentence called a proposition. Take the thought expressed by the sentence, Knowledge is power. Here the two concepts are knowledge and power. These are compared and their relation of agreement is expressed by "is." This act of comparing is called judging, and the product reached (the judgment) is expressed by the proposition, Knowledge is power. The faculty of comparing ideas or concepts is called judgment.

The last stage of thinking consists in a comparison of judgments. This process of comparing judgments is called reasoning, and the power of comparing judgments is the power of reason. In language the process of reasoning is represented by a combination of propositions called a syllogism. Syllogistic reasoning consists in so

comparing two related judgments as to discover a third. The propositions from which we argue are called the premises. The one at which we arrive in thought is called the conclusion.

Example of a syllogism :—

All men are fallible. (Major premise.)

All kings are men. (Minor premise.)

Therefore, All kings are fallible. (Conclusion.)

“The essence of the process consists in gathering the truth that is contained in the premises when joined together, and carrying it with us into the conclusion, where it is embodied in a new proposition or assertion. We extract out of the premises all the information which is useful for the purpose in view — and this is the whole which reasoning accomplishes.”

It is believed that such a detailed analysis of the sensibility and of the will can add nothing to the value of the present work, so it will not be done. Tabulating our results, then, so that the relations of the several parts can be more readily apprehended, we have the following :—

Faculties of the human mind :

I. Intellect.

- | | |
|------------------------|---|
| 1. Self-consciousness. | } These furnish presentative knowledge. |
| 2. Perception. | |
| 3. Memory. | } These deal with representative knowledge. |
| 4. Imagination. | |
| 5. Thought. | } This gives elaborative knowledge. |
| | |

(a) Conception.

(b) Judgment.

(c) Reason.

II. Sensibility.

III. Will.

Detailed directions will be given to aid in the more complete understanding, and in the cultivation, of each of these faculties. No attempt will be made to add such directions as are considered impracticable in modern school work.

CHAPTER II.

SELF-CONSCIOUSNESS.

THIS power that a mind possesses of knowing itself may vary through many stages, from simply being aware of what takes place within us, up to that more profound realization of self, which results from thinking intently upon the nature of our being and the dominating purposes of our lives. This higher and more reflective type of self-consciousness is not to be looked for in the very young, and, if found there, can be taken as an almost certain indication of an abnormal state of mind. We should expect little children to be naturally heedless, and, since they are usually impulsive, to be rather incautious. But while this is the condition in which we may expect to find children, it is not what we should strive to cultivate within them. Their heedlessness and indifference must be gradually forced to give way to caution; and their impulsive actions must be supplanted by actions which are the outgrowth of a wise forethought and especially of a careful self-examination. Even Rousseau's declaration, "I would rather require a child ten years of age to be five feet tall than to be judicious," must be taken only as an indication of what we may expect to find in children, not of what we are to aim at in their education. What can we do, then, to develop within pupils, as they advance, this reflective type of self-consciousness?

1. Lead the child, by an occasional reminder, to consider the effect of his actions upon others.

2. Aid him to examine the purity and elevation of the motives that prompt his conduct.

3. Get him to make note of the various kinds of activity that he finds have the power to correct his mental disorders, such as anger, fear, hatred, etc.

4. Lead him, through subsequent reflection upon actual experiences, to note how certain states of mind prejudice his thought either for or against men and measures. The memory will be found an indispensable aid in this matter.

5. Have him study himself for the purpose of discovering the nature of his likes and dislikes, the kind of subject (memory, observation, reasoning) that he can most easily acquire, his customary disposition (whether thoughtful, impulsive, kind, envious, etc.), his habit of will (whether decided or vacillating, etc.).

CHAPTER III.

PERCEPTION.

THIS is a faculty often thought to be especially strong in childhood. We need to bear in mind, however, that it becomes capable of more discriminating action as the person becomes more enlightened. It is possible to make our physical sense organs more responsive to stimulation, and, by this means, to develop the power of perception. But whoever makes this the aim in his culture of perception, works simply upon the surface of the matter and does not reach down to the hidden depths of the problem. The true culture of perception can be accomplished only by adding to this refinement of the organs a mind alive to many and varied interests. This can be done by storing it with a fund of knowledge upon a variety of subjects. It was once considered true that strength of perception and an enlarged power of discriminating thought could not exist together; that strength of perception had to be acquired at the sacrifice of wide learning. In support of this view it was customary to refer to the perception of savages, which was declared to be so much keener than that of highly enlightened men. This fancied superiority of savages need no longer be taken seriously. It all depends upon the environment in which they are asked to exercise their powers. Since we have learned that men are enabled to perceive things better by virtue of their

greater knowledge of what to look for in things, and that their knowledge of what to look for is determined in large part by their general information, we are prepared to assert that, at the foundation of a wise and discriminating perceptive power, there must be a full mind.

It is helpful for the teacher to distinguish between original and acquired, or transferred, perceptions. Original perception is perception of a quality by means of the sense which was evidently designed to give us the knowledge of that quality; as, color through sight, sound through hearing, etc. Transferred perception is perception by means of one sense of a quality which was evidently designed to affect a different sense; as, telling the temperature or hardness of a thing by looking at it, telling the quantity of liquid in a closed vessel by striking it, etc. Now these transferred perceptions are of very great importance to the learner, as they enable him to save much time and effort. He can frequently use his sight or his hearing, which operate through great distances, instead of his sense of touch, which would require bodily movement and to which many things would be inaccessible. But whenever doubt arises as to the correctness of the deliverances of our senses, we can test the matter only by an appeal to the sense originally designed to give us the knowledge in question. The entire science of perspective is based upon an optical illusion, — making things on a flat surface look as if they had the third dimension. All this seeming vanishes upon applying to it the sense of touch.

Some advantage will come to a teacher from knowing

that when several senses are used conjointly, as is usual in life, they reveal to us things which we could not recognize if approached through one of the senses alone. This is true to a certain extent of any familiar combination of the senses, but may easily be proved in the following manner: Take very familiar liquids, — tea, coffee, water, vanilla, orange, chocolate, — and with the nose held shut and the eyes closed, taste them and find how many you know. The person being tested should have the things given to him by another, so he will not know beforehand what he is to taste.

Since the higher forms of thought require material to think about and perception furnishes this material, it should be cultivated early in life. Every faculty is capable of its best cultivation during the time of its predominant activity. The following directions will aid in cultivating perception: —

1. Require pupils to observe objects and then to mold, draw, or describe them. These exercises will correct errors in perception and force to greater attention in it. When pupils are describing the things they are perceiving or have perceived, make them discriminate carefully between what they perceive and what they *think* about what they have perceived.

2. When some skill has been attained in the drawing and molding, have these often done from memory.

3. Give exercises in map drawing, having maps drawn frequently from memory.

4. Drill upon color discriminations in order to correct color ignorance. Do the same with geometrical forms. Do not confine this to the pure type forms, but exercise

pupils in perceiving these forms as they are approximately embodied in objects, — the sphere in the apple, the orange, etc.; the cylinder in the jar, the pipe, etc.

5. Drill in vocal music, attending to both tone discriminations and sight reading.

6. Give exercises in elementary sounds, emphasis, inflection, etc.

7. Remember that some people learn more easily through the eye; others, through the ear. They may not remember best what they learn through the sense that takes it easiest. Frequently exercise the hearing of the eye-minded child and the sight of the ear-minded child. This will give strength to the weaker part in each.

8. Strive first for great accuracy in perception; then aim at rapidity. Only intense attention to the matter in hand, coupled with an attempt to force rapid perception, will accomplish this latter end.

9. Keep constantly on the lookout for sense defects in your pupils, — short-sightedness, color-blindness, deafness, etc. In all cases needing it, bring the matter to the attention of parents, and urge the necessity of medical aid.

10. Guard the conditions of perception scrupulously, — the light, the print, the pupil's position, his health, etc.

CHAPTER IV.

MEMORY.

It will suffice for our present purpose to use the term "memory" in the current sense as embracing the elements of retention, reproduction, and recognition, though for the sake of clearness, these terms will need some explanation.

By retention is not meant holding in permanent form the ideas that have been acquired. Ideas are not distinct entities that exist apart from consciousness, to be put into it and taken out of it at pleasure. Apart from consciousness ideas do not exist. It would be just as futile to ask where the electric light is when the switch is turned as to ask where the idea is when it is out of consciousness. When it is not in consciousness it is not in existence. But if ideas are not thus retained as permanent things, *effects are*, and this is the important truth for us to learn in this connection. Each mental activity, which is the cause of an idea, leaves its effects upon the organism, and these effects are what we retain. Since these effects are retained, they constitute tendencies to repeat or reproduce the acts which made them. As these mental acts are repeated we get the idea again, now as a reproduced idea, and we have within us the capacity to know this reproduced idea as a former possession, an old acquaintance — we recognize it. This last is the especial function of memory; retention and

reproduction are only necessary preconditions. To remember is to recognize any kind of revived past mental experience. We may remember not only the things that have been perceived, but also any kind of former mental experience, such as thoughts, feelings, or acts of will.

Every mental act — whatever we perceive, imagine, think, feel, etc. — leaves a permanent impress upon us. Nothing is ever totally erased from our lives. We are different after each mental act from what we would have been if the act had never been performed. Each day's experience makes us better or worse than it found us. Not all of these things are remembered, but the effects of them all are retained. Many of these experiences are forgotten, but the consequences they have worked in us are not lost. To forget is simply to be unable to reproduce and marshal at pleasure. Forgetfulness is no sign of erasure, but only of an inability to command and use what has been impressed upon us. Frequently we find that things long since forgotten come rushing into consciousness after we have given up all attempt to recall them, and, even if they never reappeared as facts, their failure to reappear would be no sign of erasure. In support of the claim that no impression made upon a human soul is ever erased, though it may be, either temporarily or permanently, forgotten, it must suffice to mention only one instance, the classical case of the German serving girl. When she was young she lived in the family of a clergyman who was accustomed to read and recite passages from Greek and Hebrew authors as he walked up and down the hall ad-

joining the room in which she worked. She constantly overheard the sounds he made in reading, though she understood nothing of what was read. Since it was meaningless to her she made no attempt to retain it, and of course, she immediately forgot it. Years afterward, in the delirium caused by a fever, she repeated in her ravings page after page of this Greek and Hebrew with literal exactness. The impressions were permanent even when there were no ideas accompanying them.

Since that which is impressed upon a life has such permanence of effect, it behooves us to select with care that which shall be allowed to affect our pupils. Every error is, from this point of view, very costly. Fortunate are the children presided over by a teacher who has taken well to heart the truth which Horace Mann so well expressed in the following words: "Education more than anything else demands not only a scientific acquaintance with mental laws, but the nicest art in the detail and application of means for its successful prosecution, because influences, imperceptible in childhood, work out more and more broadly into beauty or deformity in after life. No unskillful hand should ever play upon a harp when the tones are left forever in the strings."

For purposes of teaching we must distinguish clearly between the mechanical and the rational memory. The mechanical memory is that form of memory which must be appealed to in the study of all items in the midst of which clear thought relations cannot be discovered. The spelling of words, the names of persons, the times and details of events, etc., are examples. Very close

attention in the process of acquisition, so as to produce as deep an impression as possible, must be largely relied upon in learning to remember such items. Joined to this and equally important with it is the element of frequent repetition. The only part association can play here is in arbitrarily grouping things on the basis of certain accidental properties.

The rational memory is that form of memory which we employ upon truth in the midst of whose items clear thought relations are discernible. As examples we may mention historic items seen to be related as cause and effect, scientific facts which are grasped as special applications of some comprehensive principle, mathematical solutions whose successive steps need not be arbitrarily held, but may be thought. In cultivating this rational memory we must learn to add to the close attention and the repetition so serviceable in the mechanical memory the clearly formed rational association of the items to be remembered. A strong rational memory is one of the signs of a developed mind, but it costs something to get it. Besides the effort and the time which it costs, we secure it at the expense of the mechanical memory—the study of relations tends to weaken the memory of isolated data; the search for laws tends to produce in us a neglect for special instances; reducing everything to terms of thought relations tends to weaken our command of facts, which should be ever ready at hand. As a result of too exclusive attention to the rational type of memory, which is readily acknowledged to be the higher type, we have persons with scarcely any knowledge of dates, with a very embarrassing in-

ability to remember names, and with such proneness to forget, that literal quotation is a practical impossibility. While a strong rational memory is a sign of a developed mind and should be strenuously cultivated, we must not forget that life requires of us a ready mechanical memory, and we should therefore strive to keep it strong enough to meet the demands of a busy world. Each variety of the mechanical memory—that for places, dates, names, forms, colors, etc. — can be strengthened only by being systematically exercised within its own domain.

In order that the memory shall be counted excellent, the individual must show readiness in acquisition, tenacity in retention, and promptness in reproduction and recognition. Acquisition involves two elements, comprehending and fixing in mind ; it is to the latter that we refer above. If the individual requires manifold repetitions to fix in mind what another grasps with ease, it is because his memory lacks this first element of excellence. The surest way to improve at this point is by giving undivided and intense attention to that which is being committed to memory. This makes study a serious matter and not a pastime, but it pays large returns for the effort. Again, the memory may retain with excellence only momentarily. This is a great weakness and is usually due to the fact that the thing learned has not been often enough repeated to be made permanent, but has been dismissed as soon as an incomplete insight into it has been gained. Frequency of thoughtful repetition is the remedy. By frequency of repetition is meant more than going over a thing a given

number of times ; it means repeating the matter a given number of times within a specific time.

There are two extremes in study which violate this thought. The first consists in repeating a countless number of times that which has been gone over often enough for one effort ; it does not even momentarily turn aside from the item that is being impressed, and therefore it gives the mind no chance to test the effects of its reiterations. The remedy for this error is to be found in occasionally stopping the repetition of the matter in question and then, after a brief interval of rest, endeavoring to repeat it without further reference to the source from which it is being learned. This interval should be gradually extended until at length the repetition may not take place for some days. In committing to memory a bit of literature, students sometimes read it over and over again, and for a long time they do not interrupt this constant reading enough to give the memory a chance to be tested. If they would read it once or twice carefully, then endeavor to repeat without the book as much of it as possible, and, when they reach their limit, read again in order to get a little more, they would secure much better results. When the entire selection has been committed, it should be repeated at intervals until it becomes a very intimate part of the learner's being ; then it will have a degree of permanence that is profitable.

The second extreme is found in that plan of study which dismisses a thing from attention as soon as it is once well acquired. So much time is permitted to elapse before it is reviewed that, when it is at last approached,

it is like coming upon that which is almost entirely new. All the old traces of it have been blurred, and before they can be deepened they must be marked out anew. It is as if builders should construct part of a building and then cease operations till this had largely fallen down and been covered with débris ; at last they resume work, but it is never at the place where they left it. How much labor would be saved if operations were systematically continued until the structure is completed ! So it is with our mental labor in committing things to memory. We are no longer compelled to re-learn the multiplication table and the much-used maxims of our youth ; they were repeated at suitable intervals frequently enough to become finished and fixed. Thus it might be with other items deemed worthy of being committed to memory. If they are kept up at intervals until they are well fixed in mind, the learner will be saved from the grave consequences of committing things merely for passing occasions.

The last item of excellence in the memory is promptness in reproduction and recognition. This can be secured only by persistent exercise. It is not enough to impress the truth upon the mind ; it must be reproduced frequently. Persons often complain of knowing things but not being able to think of them at the time. They cannot recall at pleasure what they are sure they will think of again if they only give themselves time enough. This defect may be helped by habituating one's self to reproduce items of knowledge with promptness and vigor. This will demand close attention and an effort to increase one's rate of mental activity along this line.

Nothing can take the place of frequent use of that which is known ; and oral declamation is one of the most helpful aids in the cultivation of a strong and serviceable memory.

A very fruitful subject of inquiry for the student of memory culture to ask is, What things shall be committed to memory verbatim and what shall have only the truth impressed? As a working answer to this the following is offered: Only that should be committed to memory verbatim whose language has some peculiar merit of its own. Selections in literature should be learned verbatim because of the beauty or force in the diction ; principles in mathematics, because of exactness ; maxims, because of conciseness and point, etc. Most of the text of histories, reading books, newspapers, etc., should not be committed to memory verbatim, because it does not excel in force, beauty, exactness, or any other desirable quality. The pupil might give the thought as well in his own language, and to memorize the language of the author would add nothing of merit to the learner's vocabulary. Evidently the recommendation to commit a thing to memory verbatim does not contain a recommendation either for or against committing to memory what is not understood ; neither does it advise employing the memory upon the language of that which should be attacked by the reason, as if memory could be made a substitute for rational thought. Doubtless it is wise to commit to memory during the plastic period of youth many gems that are not fully comprehended, but this is no reason for the mistaken practice of committing to memory without understanding that which might be

understood. There is no pedagogical ground for taxing the mind with senseless verbiage, when it is within the learner's ability to make intelligible the language he is asked to acquire. There is just as little ground for advising a child never to commit to memory anything he does not fully comprehend.

Direct Aids to the Cultivation of Memory.

1. Give undisturbed and vigorous attention to that which is being acquired.

2. Learn a thing through several avenues when possible. Words in spelling may be looked at, said aloud, and written. The use of these avenues together will generally be found more profitable than the same amount of time expended upon any one of them alone.

3. Cultivate any sense so that it can perceive finer shades of difference, and you indirectly strengthen the memory for its products.

4. Improve the health and vigor of the body and you lay the physical foundation for an improved memory.

5. No attempt should be made to commit things to memory when the learner is physically exhausted. The first of the mental faculties to be affected disastrously by wearying the body is the memory.

6. Repeat at reasonable intervals whatever has been thought worth committing to memory, until it gets so fully impressed as to be ready upon call.

7. Teach children how to commit a thing to memory by searching for its thought elements, or picture series,

or catch words, or whatever it contains that may be taken as an aid to an intelligent fixing of the words.

8. Teach pupils to search for thought elements that will enable them to associate what is being learned with what is already well known.

9. Frequently have pupils reproduce things in the way in which they were meant to be of service when they were committed. If a poem has been committed for oral recitation, it is not enough to have it often *thought* over ; it should often be recited aloud. Pupils can frequently recite correctly in regular order the entire multiplication table and yet not give the correct products when these are called for promiscuously in problems. Such irregular drill should be frequent, for it is in this way that multiplication is valuable.

10. Discourage the practice of committing a thing to memory by carrying in mind a picture of how it looks upon the page. All such arbitrary expedients have but a temporary value, and learning things for only temporary ends is destructive to the permanence of memory. Do not countenance learning things merely for the next recitation ; habitual review, in the recitation, of related past knowledge will do much to correct this error in the learner.

CHAPTER V.

IMAGINATION.

IT is a popular error to think of the imagination as a faculty serviceable only to the sentimental, or at best to the writer of fiction or poetry, but having little if any real worth to the serious student of sober matters of fact. This mistaken conception has been very far-reaching in its baneful effects, and has led to a serious neglect, on the part of teachers, of this very important faculty. Instead of being a capacity valuable only as a means of diversion, as some think, it is the power required in all mental picturing that involves a modification of the experiences of the past. The memory as a representative faculty can merely reproduce individual experiences as they have been met ; imagination takes these experiences as its material and modifies them to meet the purposes in view. The memory is a reproductive faculty — it is in no direct sense a faculty of acquisition, but rather of conservation ; the imagination is a faculty of production, of actual creation in so far as that term can have any true meaning in reference to the work of finite beings. In all acts of original illustration either of philosophical, scientific, or practical truth ; in all mechanical invention, original composition, or decoration ; in the performance of intelligent manual labor, or the production of an ideal of human character, — in a word, in all mental advancement held within the bounds of in-

dividual notions and not directly supplied by the senses, the imagination is involved as the dominant faculty.

The closeness with which activity of the imagination is bound up with that of the other mental faculties will best be seen by calling attention to certain limitations placed upon it. Since the imagination must use as its material the data furnished by other forms of mental activity, it is evident that the scope of our mental experiences will serve to fix a limit upon the scope of our possible imagining. If a child's experiences have been greatly circumscribed in extent and variety, he comes to the task of imagining very poorly equipped; it is a modern version of attempting to "make bricks without straw." In this is foreshadowed one of the indirect means of cultivating the imagination. Again, it is observed that children of all grades of maturity display marked differences in their ability to make original constructions, even when they are furnished with duplicate lots of material. One child seems unable to think of anything else to do than merely to set things up and throw them down; another is rich in expedients for "making things." One must wait for others to suggest lines of employment or play; another is full of schemes and is passing from one thing to another with promptness and precision. These differences are due primarily to differences in the power of imagination; and this variation arises from the fact that one is unable and the other abundantly able to detect relations among things or ideas. Now this power to detect relations is thought; hence it is clearly seen that another limit placed upon our possible imagining is fixed by our power of thought.

This leads to the remark that not all the picture-making tendency of the mind, not all day-dreaming and fanciful scheming are truly imaginative. The imagination creates by laws rather closely connected with reason ; fancy is governed by associations that are more arbitrary and whimsical. The imagination, though moved by strong emotion, aims at results of a definite character ; fancy can scarcely be said to aim at all, but rather simply to catch at the unexpected, the startling, the brilliant. True imagination, then, is the picture-making faculty operating under the guidance of reason. Whatever strengthens the power of thought, therefore, and teaches it to operate in the concrete, is of service in the culture of the imagination.

Kinds of Imagination.

For purposes of pedagogy the imagination is most profitably divided into two kinds,—the receptive imagination and the creative imagination. As is indicated above, the imagination is the picture-making faculty under the guidance of reason, but this may be the reason of the person himself or that of another.

If the mental imagery is subject to the dictation of another, as in reading a book or listening to a lecture, the imagination is *receptive*.

If the mental imagery is subject to the guidance of the person's own unaided reason, as in writing a book or inventing a machine, the imagination is *creative*.

It will be readily seen that this distinction is not one that in any way has reference to the fund of ideas pro-

vided for the service of the imagination, but merely to the conditions under which the person acts in his use of such ideas. In the receptive imagination, the person has on hand a certain fund of data ; this is reproduced and then the imagination builds it into new products. But all this is subject step by step to the dictation of another mind, and presumably one which in that line is more experienced. In the creative imagination the person has on hand the same fund of data ; this is reproduced as before ; and then the imagination builds it into new products. But now the choice of items, the arrangement of the several parts, and even the ideal which is to be actualized, are all left to the guidance of the person's own thought. The inference is plain from this that the receptive type of imagination should be appealed to and be cultivated before the creative type, both because it is easier for the child and because he will thus get at the outset the advantages of wisdom and experience as guides to the formation of correct habits of imagination, before he is thrown upon his own unaided resources in this matter. This relative order should be observed, whether the imagination exercised is of the artistic, or the scientific, or the practical kind.

Objection is sometimes urged to the use of the term "creative" in reference to the human imagination. It is stated that the imagination can create nothing new ; it can at best only take old materials and put them into new relations. All the elements in the product are old, and we are totally incapable of making anything in imagination which was not furnished in its elements by the senses. If by creation we meant bringing into

being, then the criticism would be a valid one; but when it means producing that which in its present form did not previously exist, the objection to the word seems unfounded. We speak of persons making new houses, new wagons, new art designs, or new clothing, and the expressions go unchallenged; and yet most people have doubtless never stopped to think in what the element of newness consists. All the materials in a new house—the wood, stone, iron, slate, etc.—are old. What is it, then, that makes it a new house? We distinguish between new clothing and “made-over” clothing, and yet all the materials in the new garments may be as old as those in the others. What, then, is the ground for the distinction; and just what do we mean by a new garment? Every material product of man’s skill is made up of two things,—material elements and relations. The material elements man must always find at hand ready for his use; he cannot bring any of them into being. The relations, or arrangement of these elements, he furnishes. And these new relations constitute the only element of newness in any of the products of man’s skill. A new house, then, is all old, except the arrangement of the materials which compose it. If these materials have never before been put into the relations required for the production of such an object as is before us, we call the object new; if they have been in such relation before, we call the product a “made-over” one. A new garment differs from a made-over one only in this: the materials of the “made-over” garment have been used in garments before, while those of the new one have never been so used.

Now, in the products of imagination we have just the same amount of newness that we have in material products, — new relations. All the elements (ideas) which serve as the data of imagination are old; the arrangement alone is new, and these new relations man creates.

Dangers of the Imagination.

The imagination, more than any other faculty of the human mind, is liable to certain dangers, which arise doubtless from the fact that it tends to act spontaneously, and to work out a train of consequences from the impetus of a simple suggestion.

1. *If the picture-making tendency is developed out of proportion to the judgment, the individual is liable to become visionary.* His imaging may remain under control of what little judgment he possesses, but the danger is that he will enter into various wild and reckless schemes, because his strong imagination prefigures results which he fails to see are impracticable and therefore useless. The remedy for such a state as this is to be found in bringing the individual into vital contact with stern matters of fact. The result will be that these will give him a fund of practical information, and develop his power of judging in a world of realities.

People thus ill proportioned are often spoken of as having an over-powerful imagination. This seems, however, to be placing emphasis upon the wrong term. No person was ever born with powers too great. This lack of harmony is the result, not so much of excess in the picture-making faculty as of deficiency in the judg-

ment. Due proportion may be secured either by diminishing, through inactivity, his imaging ability, or by increasing, through appropriate action, his power to judge. No thoughtful teacher will ever strive to educate through repression, when proper harmony and greater absolute strength can be secured by development. If proper harmony cannot safely be reached by this process it is better to resort to repression than not to secure it; but the effort at development of the weaker part should always be undertaken in preference, especially when neither member is inherently evil.

2. *Because the imagination acts so vigorously in obedience to the promptings of strong feeling, it is in danger of becoming seductive.* While the individual is reveling in the delights of imaginary situations there is developing within him a taste for such highly colored experiences, and, before he is aware of it, the commonplaces of a world of reality may become unbearable. Stern duties will not be met, and imagining one's self conqueror of an important or difficult situation will take the place of persevering endeavor, which alone can overcome. Firmness of character is thus in danger of giving away. Reliance cannot be placed in such an individual because he confuses the imaginary with the real. In little children this leads to many forms of nursery untruths. This is not to be confused with deliberate lying, which is intentional deception; but placing so much belief in the reality of our mere imagining prepares the mind for the practice of falsehood. It at first renders us familiar and contented with uncertain data; soon the unreal becomes more of a joy and more capable of bending to our pur-

poses than the real ; then we need but to add the deceptive intention in the use of material we have become accustomed to handle, and we have the liar. It is rather an evolution to a bad end, than a sudden reversal of character ; and right in that lies the danger of imaginative activity that is largely prompted by unbridled feelings. The remedy is again plain, — an appeal to matters of fact ; a development of the judgment so that unreasoning feeling shall cease to hold sway ; and a constant shaping of events so that the stern demands of unrelenting necessity — hunger, thirst, inconvenience, etc. — shall fall upon him who is seduced by the unrealities of a world of mere imagination.

3. The third great danger of the imagination is that *it is likely to become corrupting, because here we have a power as responsive to evil as to good.* It was stated above that the imagination tends to work out a great train of consequences from a simple suggestion. Now this suggestion may come either from our contact with a fund of pure and elevating truth, or from association with the corrupting influences of sight, sound, or thought. It is evident that the trend of our imaginative activity, thus awakened, will be determined very largely by elements that are under our control, — the fund of ideas already acquired ; the purpose or intention of the person ; the habits he has established, and the strength of his will. In the proper direction of these forces lie the preventive or corrective measures for this danger.

Practical Aids Recommended.

1. *Be careful of the perceptions of pupils.* It matters greatly what children see, hear, think, or do. It has been pointed out elsewhere that the effects of impressions made upon the human soul are permanent. Here it should be added that the fund of ideas received through perception will furnish the data for imagination and do much toward determining the trend of imaginative activity. Whether a child's imaginings shall be healthful or hurtful will depend largely upon the moral purity and worthiness of that which he is called upon to listen to or look upon. How carefully children should be shielded from the moral pollution of improper pictures, of street loafers, or corner-store loungers will be readily determined when we have placed the value we should upon a child's mental and moral integrity. And we dare not forget that this integrity is affected for all time by their perceptions, which become the burden of their imaginings. It may take contact with but a little of evil to fan into a consuming flame the imaginings of a child who might, but for that contact, have been made almost divine. In these recommendations it is not forgotten that some one must face evil in order to put it down; but that person should be one whose character is established beyond question, and not a child. In the beginnings of childhood it sometimes requires but a very little thing to start a train of circumstances that develop into monstrous consequences. The switch that moves the railway track but a few inches sends the trains to

their different destinations, often many miles apart. A wholesome environment to furnish a child's perceptions will almost insure safety in imaginative growth.

2. *In so far as it is possible, keep the mind actively and pleasantly engaged with that which is worthy.* Inactivity is impossible, and activity that is constantly opposed to one's inclinations is impracticable. We must learn to make the proper at least as delightful to the child as the improper. His indulgence in the good and enthusiasm for it will thus become matters of early habit, and this is a powerful safeguard against a corrupting imagination.

3. *Prevent or correct every exercise of a brooding or moody tendency.* This disposition, which is not common to childhood, can be corrected by seeking out pleasant companions, enjoyable books, or interesting enterprises. Activity is a characteristic of childhood and merely needs guiding. An unthinking constraint laid upon a child will have a tendency to render him irritable, unhealthy, speculative, and positively vicious.

4. *Urge upon pupils the wrong of evil thinking, and teach them that purity of thought is even more deep-seated manliness than purity of action.* Our actions may be controlled as a matter of public or social policy; if our thoughts are controlled it is likely to be from the motive of inherent worth. Actions may be feigned; the thoughts we entertain are always real. This distinction is the more important because many persons who will not sin openly will revel in the vices of a polluted imagination. They are thus destroying the very foundation of their moral character. Improper action enables others

to know the truth and to render help ; improper thought is secret. In all this, reference is made merely to the effects upon the actor ; it is not intended to minimize the consequences of action upon the community. The purpose is rather to emphasize the thought of Robert Browning in "Saul" : "'T is not what man *does* which exalts him, but what man *would do*."

Directions for Cultivating the Imagination.

1. Keep the child in familiar contact with facts in nature, art, literature, etc. He may thus secure a fund of ideas that will be suitable material for subsequent imagining.

2. Drill the child frequently in recalling his fund of information. This is the second preparatory step to the training of imagination.

3. Give the child numerous examples of true imagining to serve as models for him to adopt. These may be chosen from literature, history, art, invention, etc.

4. Furnish numerous opportunities for the exercise of his receptive imagination. These may be found in clay modeling, paper folding, drawing, etc., subject to dictation ; in verbal description or pictorial illustration of scenes read about or heard ; in the visualizing of conditions in arithmetic, geography, history, etc. — in a word, in every scheme that will afford an opportunity for the child to exercise his imagination *subject to the direction of another*, given either by word of mouth or by writing.

5. Now the child is prepared for the final step in the development of his imagination, — creative work. This

creative activity may be secured through composition (bits of fiction in prose or poetry may be invented and then illustrated; pictures, events, or scenes in the neighborhood, natural forces, mythological personages, etc., may be made the basis of original short stories); designing in the drawing class (the designs may be for wall-paper or oil-cloth patterns, etc.); pictorial illustration of selections in reading, history, geography, etc.; inventional work with compass and ruler.

CHAPTER VI.

THOUGHT.

IF we accept Froebel's view that the purpose of the school is the development of principles in the several subjects rather than the mere impressing of isolated facts, we shall doubtless accept the view that the culture of thought (which is the power that grasps principles) is of paramount importance. But, in order to know just what this faculty of thought is, a few words upon its nature will be needed.

The word "thought" has been used in varied senses to mean the reasoning power of the intellect, all the acquisitive faculties of the intellect, and the intellect, or the mind. In this connection we use it to mean the power of comparing, assorting, and arranging our fund of ideas, of thus classifying these according to their agreements and differences, and of comprehending the truths revealed in such classifications. It is this power that enables man to profit by experiences, to infer that what is true in a given case is likely to prove true in similar cases. It enables us also to reap the benefits of the successes or failures of others, — to copy the one and to shun the other. It is thought that makes possible all the advances in the arts and sciences, that employs nature's forces in the service of man, that domesticates the wild animals of the earth and makes them obey man, that contrives to baffle disease and to employ all the developing agents

for man's advancement, and that enables man to escape error, to appropriate truth, and thus to approach the divine.

Thinking is commonly treated as including three steps, or stages of complexity, — conceiving, judging, and reasoning. It is not to be understood that one of these stages is employed and that, after its work is finished, the next one is begun. They are all bound up within the process of thought, and are in constant interaction. When we think, in its fullness, we can analyze the process into three clearly distinguishable acts and their respective products, and these acts we call conceiving, judging, and reasoning.

All that is said, therefore, in the chapter upon "The Concept" may be taken as part of the discussion of the nature and development of thought. It is beyond the purpose of a work like this to discuss in detail the subjects of judgment and reasoning. For such a discussion the student must look to works on psychology and logic. The only thing that can be done here with profit is to give some practical guides for the development of thought, which will apply to it in all three of its stages.

One distinction it seems important to make in this connection. It is the distinction between inductive and deductive thinking or reasoning.

Inductive reasoning is a process of inference which is based on experience and which reaches a generalization that applies to cases beyond experience.

What is said upon the subject of the inductive method of teaching may be considered as so much said in the discussion of inductive thought, for to teach inductively is but to supply the conditions and stimulate to the activ-

ity of inductive reasoning. In this connection we need to add the following remarks :—

Inductive reasoning is a process of *inference*; that is, a process of knowing “by means, or on the ground, of facts or evidence.” An inferred proposition is a proposition which is seen to be true, because of its relation to some other previously known proposition. Many persons regard as inductions, and as the only perfect inductions, those cases in which we examine *all* the individuals of a class and then make a summary statement concerning them. Instead of forming instances of perfect inductions, these cases do not seem to be inductions at all. They are rather statements of exactly the same truth, but by means of slightly different words. We examine each of the twelve months of the year and then, as the outcome of our investigation, having found that each one has in it less than thirty-five days, we assert that no month contains thirty-five days. We examine all the pupils of a class, and then assert that they are all honest, or that none of them are ignorant of a certain subject. These are simply abbreviated forms of expression; and, because we have examined all the possible cases, they are summary statements of our findings and are worth much. The mental process involved in such a performance, is very different, however, from the mental process in an act of inductive inference. In this latter it is necessary that we discover some causal connection between the items revealed in our experience and the class of things to which the few individuals under examination belong.¹

¹ See Elements of Inductive Logic, Part I, by Noah K. Davis.

To become a case of real induction our inference must apply to cases *beyond our experience*. It must be a *generalization*. A man sees a wounded bird lying upon the ground; he endeavors to ascertain the cause of its being there, and, after due consideration, decides that a hunter was the cause. This is often regarded as a case of induction, because our first act is an observation of the wounded bird; hence, it is thought, we are performing a process of inference from experience. In truth this is a case of deductive reasoning, in which our attention is first directed to the minor premise. And, since the major premise used in this act of reasoning is not certain, but doubtful, the conclusion is at best but a probability. Perhaps it is this element of probability which, more than anything else, serves to make men call the process one of induction, because the inferences reached by induction are always but probable at best. The probability may be great or small, but the fact that exceptions are conceivable, when we generalize beyond experience, renders it impossible that our empirical generalizations should be absolutely certain.

Deductive reasoning is a process of inference which starts from a given generalization and reaches a conclusion of equal or less generality. Some of the generalizations from which deductive reasoning starts are intuitively known. Such are the axioms of mathematics, the primary laws of thought in logic, and the ideas of being, cause, space, and time. Others are inductively established. Such are the general laws of physics, astronomy, biology, etc., — the generalizations of the natural sciences and of all other empirical sciences. All

demonstrative reasoning, as in algebra, arithmetic, and geometry, whether it merely establishes rules on the basis of the axioms, or solves problems on the basis of the rules, is deductive. All applications of laws, or other generalizations, to individual instances is deductive. In a word, all mental processes which pass from generalizations of a given order to those which are narrower, or to individuals, are deductive.

Aids to the Development of Thought.

1. *Train children to be exact in their perceptions.*

Since thinking is a process of mental sorting of ideas, it is evident that its exactness will be determined in part by the accuracy and the completeness of our ideas as furnished by perception and revived in memory.

2. *Require children to use language with exactness.*

Language is both an index to thought and an instrument of thought. To require children to say exactly what they undertake to say will necessitate careful thinking; this will result in developed thought power. In order that the greatest possible help may be given along this line, it is necessary that the teacher should constantly present correct models of language. This does not mean in the language class alone, but in every class, and out of class, the teacher's thought and expression should be models of correctness. Then, whenever the interruption will not sacrifice the subject in hand, correct language and correct thought should be unfailingly demanded of the child. Figurative language should be used very sparingly with children, until after they have

been clearly impressed with the literal meanings of the words that enter into the figures of speech.

3. *Deepen, as well as broaden, the child's vocabulary.* Ordinarily attention is given only to increasing the number of words at the child's command. Such a broadening of his vocabulary, if done intelligently, will enlarge his scope of ideas and improve his powers of expression. But we need also to attend to increasing the *clearness* of meaning attached to the words he uses, as well as to increasing the *number* of meanings of words that have more than one. While this deepening process will not seem to enlarge the child's vocabulary, it will increase his fund of ideas and thus render both his thinking and his expression more exact.

4. In the "*reasoning studies*" (those where truths are involved rather than simply facts) *let most of the teaching be done by means of questions.* If this is not done, the learner will often endeavor to prepare the lesson by merely committing to memory the expressions found in it. All of this may be recited correctly without the learner becoming aware of the truths expressed. In very truth "a question is the teacher's instrument for making a child think." In order that the reasoning subjects may furnish to the learner the power which they are capable of furnishing, they must be addressed to his understanding and not merely have their language addressed to his memory. In order that we may avoid the error of attempting to "lead by questions" where leading is impossible, it is necessary that we fix the limits to this vital teaching process. Any arbitrary items, such as a name, the particular words of an

author, or any other matter of fact, *must simply be told*. Whether it shall be told through the book or in the words of the teacher, circumstances must determine. Sometimes analogies are plain enough for a child to get the item by a good bold guess ; but such a practice should be discouraged, because he will not then know that he is right until he is told so, and the practice is not worth what it costs in effort, time, and the establishment of bad habits. There are places where telling is good teaching.

5. *In the processes of reasoning insist upon every step in the thought.* This direction is especially needed in those parts of subjects that have become mechanical to the teacher. If, through great familiarity, they have become very easy to the teacher there is danger of his thinking them correspondingly easy to learners. If through constant use of them his mind has become directed to their art side rather than to their science side, there is danger of his forgetting that any reason is necessary. This is why it often occurs that brilliant scholars are very poor teachers. In solving an equation in algebra or a problem in arithmetic, in demonstrating a proposition in geometry, or in disposing of a logical proposition in grammar, their minds work so rapidly that they express to the class only an occasional step in the thought process. The remedy for all this is in the teacher's habituating himself to ask *why* each assertion is true.

6. *Have constant comparisons entering into the study of all subjects.* In history, men and movements may be compared ; in geography, places ; in literature and gram-

mar, the truth of related sentences; in arithmetic, problems; etc. Take the four typical unconditional propositions presented in deductive logic (A, E, I, O), and compare their truth.

A. The universal affirmative proposition — *All metals are brittle.*

E. The universal negative proposition — $\left\{ \begin{array}{l} \textit{No metals are brittle.} \\ \textit{All metals are not} \\ \textit{brittle.} \end{array} \right.$

I. The particular affirmative proposition — *Some metals are brittle.*

O. The particular negative proposition — *Some metals are not brittle.*

Now, if A is *true*, how does that affect the truth of the others? If E is true? I? O? Then if A is *false*, how does that affect the truth of the others? If E is false? I? O?

Such comparison of related sentences should enter largely into the study of grammar and literature. Parsing and analysis of isolated sentences may be made to develop the reason, but they often sink to the level of unthinking formalism.

In arithmetic and algebra dwell much upon principles and rules for operations, and less upon isolated problems. If a learner is master of the laws of operations, he knows the subject; if he is not, he does not know the subject, even if he can solve problems. The possible conditions and difficulties that can be introduced into problems are almost endless. We can never hope, therefore, to make the child able to solve with ease any problem that may arise. When he once understands

the laws involved, we should give him all the practice in their application that circumstances will permit, but we should not aim at the impossible task of exhausting the side of practical application in these subjects.

7. *Avoid hasty inductive inferences.* Put every such inference to the test of facts. Much of this should be done with learners in the physical sciences, because there error can be soon uncovered. Historical inferences, judgments upon conduct or character, opinions upon questions of the day, etc., should all be tested by requiring a reason for the faith that one possesses. Such practices will make the child careful in forming opinions, just in judging character, and prudent in business.

CHAPTER VII.

THE FEELINGS, OR SENSIBILITIES.

THE sensibility, or capacity to experience pleasures and pains, is the most changeable and mysterious of all the powers of the human soul. Its culture demands the greatest skill, discernment, and real wisdom required of the teacher by any of his duties. How to make a child kind and sympathetic but not sentimental; how to strengthen self-reliance without rendering the child bombastic and conceited; how to make him economical but not avaricious; how to render him just but not pitiless, — these and many other problems await practical solution and are to find it in the proper culture of the feelings.

In order that we may know what to aim at in cultivating the feelings, a brief discussion of their nature is necessary. In all conscious experiences there is a certain degree of pleasure or pain, of comfort or discomfort, of satisfaction or dissatisfaction. Now, we use the term "feeling," or sensibility, to designate the capacity we all have for experiencing such agreeable or disagreeable states of mind; and we call the products, or the mental states themselves, feelings.

These feelings, which are always states of mind, arise either from some bodily cause or from the thoughts we may be entertaining. If the feelings are the result of a bodily cause, we call them *sensations*. These sensa-

tions may arise from the action of the special sense organs, the eye, ear, nose, mouth, or surface of the body (touch organ); or they may arise from the action of the deeper muscles, or the internal organs. But in every case, if the feeling arises from a bodily cause, it is a sensation. Further, we need not give in this place special names for the various kinds of sensations, as they would only complicate our discussion, and would add nothing of value to pedagogy.

If the feelings are not the results of a bodily cause, but arise simply from the entertainment of ideas, we call them *sentiments*. The sentiments may arise as the accompaniment of ideas about beauty, goodness, or truth, and then we call them respectively the æsthetic, the moral, or the intellectual emotions; or they may have reference to other persons, when we call them affections (love, a benevolent affection, and hate, a malevolent affection); or they may be feelings that go out toward some object and are accompanied with a wish to possess it, when we call them desires. But, neglecting these distinctions, the important thing for the teacher to remember is, that all the sentiments are feelings which arise as the accompaniments of ideas. If we wish to awaken a certain sentiment in a child, we must give to him the ideas suited to arouse that sentiment.

We cannot get at the feelings at first hand, but must regulate them, sensations or sentiments, by regulating either the bodily states or the flow of ideas. If we desire a child to have pleasant sensations, we do not place his body in a strained or pinched or otherwise uncomfortable position, and then say to him, "Now be comfortable

and enjoy your sensations." We proceed immediately to put his body into a position that is easy and free, and where the stimuli of heat, light, etc., attack it in a way to which it can respond with ease, and then he *becomes* comfortable in body as an immediate result. So, if we wish a child to have sentiments of a certain kind, we must not direct him to feel them, but we must impress upon him the ideas suited to produce them and the feelings will come as a necessity. If we wish to get a child to feel pity we should not direct him to do so; we should bring to his notice the circumstances of persons who are in a pitiable condition. If we wish him to be joyous, fill his mind with thoughts of pleasurable things. Especially if we wish a child to change quickly from an emotional state to a different one, it is useless to *direct* him to make the change. Force upon his attention the ideas of the new kind and the change of emotion will follow. If we wish a child, who is now gleeful, to become serious and earnest, we may require him to repress the expression of his mirth so that we may get at his thought, but then immediately there should be brought to him some ideas that will require earnest endeavor.

As the mind is superior to the body, so are the sentiments superior to the sensations. Our aim, therefore, should be to get the child to live in the realm of the higher sentiments rather than, as he now does, in the realm of sensations. Educate him to appreciate and enjoy the delights of art, literature, and reflection, rather than to be bound down to the gratification of his sensuous nature in eating, sleeping, and drinking. The aim

of education, says Compayré, is "to substitute the book for the wine bottle, the library for the saloon ; in a word, to replace sensation by idea." But, while this is to be the teacher's aim, he must always remember that it is necessary to appeal to a child through the medium of the things which he can appreciate. A child is best governed and taught upon his highest plane, but it is not possible to awaken interest by appealing to the things beyond his comprehension. At first, it is doubtless true that the only sphere of feeling for a person is that of sensation ; to this, then, we must appeal. Work may be made to produce pleasure, and indolence to give pain. Right doing may be made agreeable, and wrong doing disagreeable. But when the child shows that he thinks upon the nature of such matters themselves, and not merely upon what they produce as consequences, we should appeal to his thought, expect it to awaken proper feelings, and gradually discontinue making the acts pleasurable or painful. The satisfaction of right doing, of duty performed, of wrong inclination checked, should begin to be reward enough to stimulate his best endeavor, even though the acts themselves may cease to be pleasurable or may become positively painful. The child must learn to be obedient, patient, kind, truthful, and to practice the other virtues, even though the effort costs him much. To neglect giving him this opportunity, or even pressing him to its performance, when his mind is mature enough to be thus appealed to, is to degrade the child and to refuse him one of the best courses of growth available to any one. Now an appeal to the pleasures or pains of mere sensation should be made only when it is

found that the ends of government or teaching cannot be secured in the higher realm.

Methods of Cultivating the Feelings.

1. *By repression.* Now that we know what the general aim is to be in the cultivation of the feelings, we must inquire into the methods of procedure suited to the attainment of this end. For every desirable feeling that we may wish to strengthen, we shall be forced to reckon with a related undesirable one. It is because of the persistence of such injurious feelings, that the problem of the culture of proper feeling is so difficult. Hence our first method of cultivation is by repression of these evils. The human life is not an empty thing into which a feeling of some kind may be brought; if it were so, we should be free to choose the desired feeling and then strengthen that. But, in fact, feeling of some kind is always present with us; and, when we come to the task of developing any kind of feeling, we may find its opposite already present and pressing to the front in obedience to the law of all habit. The latter must be brought under control before the life is free to develop in the line of its choosing. Not that the wrong must first be totally eliminated. That is impossible; it must be repressed.

Now, since all feelings are states of mind, it would seem as if the most natural thing to do is to regulate directly the flow of ideas which make the feelings possible. But while this would undoubtedly be the most direct and effective way of reaching the result, were it

possible, it is too difficult an undertaking for most people to venture upon. Accordingly we must find an easier means of training for children. We have it in the management of their bodies. All feeling tends to expression through the body ; hence the first thing to have a child do in learning to control his feelings, is to have him check their expression. If he is angry, there is an immediate tendency for it to find expression in rigid muscles ; let him force the muscles into relaxation for a moment and the anger will largely evaporate. If he is sad, there will be the drooping of the muscles of the face ; let him force these into the lifted attitude of laughter, and sadness will vanish.

2. *By stimulation.* But if such a check is the first thing to apply in the culture of the feelings, it is only that the child may have an opportunity thereby of doing something better. When the expression of the undesirable feeling is checked, and the individual has himself again in control, it will be for only a short time, provided he continues to entertain the thoughts which gave rise to the feeling at the first. In this, then, is indicated the second natural step. The child must immediately fix his mind upon such ideas as will give rise to the feelings desired. He must dwell upon these ideas, perform the bodily actions which are usually employed in expressing such feelings, put himself in the midst of an environment which will produce the ideas he wishes — in a word, do everything needed to keep the desirable ideas uppermost, and then the undesirable ones can have no place.

The above directions all assume that the child is in a state of mind caused by conflicting emotions. Many

times we find him in a passive, quiet, but desirable mood. Then there is no necessity for repression, but we can at once begin stimulation. In this it is encouraging to remember that the oftener we arouse the desirable feelings, the stronger will the tendency to that kind of feeling become. As a result of this, we shall find the child developing a certain habitual emotional mood. If this is of the right kind it will fortify him, as all right habits do, against the disturbances of opposing wrong ones. A person in whom joyous emotion has become habitual can rise above the occasional tendencies to depression and sadness. This emotional state may be made habitual by constantly searching for the bright, encouraging, uplifting features in things, — by entertaining suitable ideas.

Another means of stimulating desirable emotions is by *acting in response to them when awakened*. Whenever a child has his feeling of pity aroused, he should be given an opportunity to do something to relieve the condition which awakens pity. If his pity is often stirred by the artificial, as in the drama, without any result in action, he forms the habit of not acting, even when his sympathies are touched by real and deserving objects. This stage presentation of the pathetic, which we know is not accompanied by real suffering, makes the emotions artificial, and the result is a hollow sentimentalism. If a child is joyous or hopeful, he should be encouraged to act in such a way as will bring joy and hope to others.

Feelings have been spoken of as desirable or undesirable. Is there any basis for this distinction excepting that of mere preference? Are not certain feelings said

to be more desirable than others because that affords us a ready excuse for our preference? All painful feelings, whether of simple sensation or of the higher emotions, as sorrow and fear, are depressing, weakening, and sickening to both the body and the mind. We might try to argue that a thing is wholesome merely because it is pleasant to the taste, and unwholesome when it is not liked; but if it positively nauseates, we need no argument to convince us that it is not proper for us to eat. Now, painful feelings might still be profitable, if the only objection to them lay in their being unpleasant; but when we see that they weaken and impair the efficiency of the person, we must set them down as an evil, and hence, as undesirable. In practice we may be compelled to resort to them either in government or in teaching, but it should always be with a distinct appreciation of the fact that they are then a necessary evil but none the less an evil, and they should be put away just as soon as the opposite emotions will effect the desired result.

Pleasurable feelings (either sensuous or emotional, as joy and hope) strengthen, invigorate, and render the whole being more efficient. Nothing will impair the strength and proper working of the bodily functions — digestion, circulation, etc. — more quickly than grief or anger; on the other hand, nothing acts as a better tonic than joy, love, hope, and the other pleasurable feelings. It is just as true that these pleasurable feelings stimulate the whole mental power to better service and are therefore desirable.

But, while it is evident that pleasure is more valuable than pain as the prevalent state of the sensibilities, it

should not be forgotten that the question of quantity of either is also important. An intense state of joy — delight or ecstasy — is disastrous in its effects upon intellectual activity. A person in the height of rapturous feeling can never think soberly and wisely. Such rapture may be a good thing to introduce occasionally because of its uplifting and restful effects, but it should not be resorted to often. A mental atmosphere that is pervaded with hopefulness, kindness, and joyful interest is the atmosphere to cultivate in the schoolroom. Hopelessness is of all things perhaps the most depressing, and especially in a child, with such a large future before him. But “quiescence of emotion is the best condition for intellectual activity,” and even then it must be emotion of the right kind.

Even though pleasure is to be preferred to pain, this distinction alone will not carry the teacher far in his effort to cultivate the feelings of his pupils. We must also determine a scale of excellence in pleasures themselves. It is plain that a person may find pleasure in that which is low and sensuous, or in that which is elevating, spiritual, ennobling. What can we take as the mark of progress toward this latter end? Broadly considered, we elevate the feelings in proportion as we intellectualize them. The pleasure of discovery in truth is more to be desired in our pupils than the pleasure derived from eating or from the gratification of vanity. As the child matures, and his fund of information increases and his power of thought enlarges, we should strive to reveal to him the intellectual element in all his lines of enjoyment. It is this element which marks the

difference between classical music and pleasing jingles, paintings of great artists and mere daubs, literary works of great merit and mere stories ; and this is what constitutes their permanence and value. The shallow music, which by its easy jingling character catches and pleases the ear, may be taken up by the masses and become for a brief time the subject of eager and ungovernable desire ; but when the sense has become weary of responding to that peculiar and pleasing stimulus, there is nothing else in the music to engage the mind and it is soon dropped and forgotten. If it ever again becomes so popular, it must be with a new generation of persons. So it is with all other forms of art ; if the pleasing quality in them is merely sensuous, they will cease to satisfy the person who is becoming intelligent along those lines. He has risen to larger and nobler enjoyment. It is because of the wealth of meaning which addresses itself to the intelligence, in music, or painting, or writing, that the classic in them lives and engages the admiration of men. It is to this that the child should be educated, and in this that he should find his greatest enjoyment. Nothing will make this possible to any one but habitual contact with that which is grand and significant in all these forms of art, and increased enlightenment in that which the classic is meant to reveal.

This purifying of the feelings must receive attention in one other domain in our discussion. We have spoken of stimulating the feelings to proper response in the discovery of *truth*, and also in the revelation of the deeper significance of *beauty*. It remains only to show its possibilities in the realm of the *good*, or morals. To many per-

sons the term "conscience" signifies merely the feelings that are aroused by doing right or wrong. In truth a person's conscience is *his reason applied to his own moral conduct*; and, as all reasoning is accompanied by feeling, the element of approval or of disapproval will appear. Conscience is not, then, a distinct faculty; but rather a name for our dual capacity of intelligence and feeling *when they are applied to our conduct in the moral realm*. It is evident, therefore, that the feeling element in conscience may be cultivated along two lines,—that of certain response to what we in our immaturity have grown accustomed to calling right or wrong, and that of response to what we in our growing enlightenment know is right or wrong. We should make the conscience very sensitive to what we think right, and we should improve our notions of the right in order that it may be made sensitive to only the proper things. In training the conscience we need to enlighten the person, while at the same time we impress upon him the importance of conformity to its dictates. A person of good intentions may be very unjust and dangerous because of his ignorance. If we would be good (to any positive purpose), therefore, we must be wise.

How, then, shall this greater enlightenment and greater sensitiveness of the conscience be brought about? Whatever will increase the learner's knowledge, strengthen his judgment, and, at the same time, make him as fair in applying his true judgment to his own act as he is in judging the acts of others, will indirectly train his conscience on the side of intelligence. If we add to this a special study of the reasonableness of just moral

claims, we shall add to the enlightenment of his conscience all that the schools can do in a theoretical way. But with this it is well to remember that, since morality is a matter of practical living, doing the right will open up to the individual many items for his judgment which could not be apprehended in any other way. We learn some things through experience which could not be conveyed to us by any other means ; these, then, become items which will enter into our future judgments, and we have a better basis of fact on which to form a judgment than persons can have who have been denied such experiences.

But most wrong-doing, which forces itself upon our attention, does not arise from ignorance ; it arises because of a disregard of known obligations. How, then, can this greater sensitiveness to the dictates of reason in the moral realm be cultivated? *Only by implicit obedience to the behests of conscience.* He who persistently does what he knows is wrong, even though at first his conscience may have condemned and tormented him, will soon have his sensibilities so blunted that they will give him but little if any uneasiness. And when he reaches the point of known wrong-doing without any accompaniment of uneasiness, there is little hope of his reformation, unless his course in life is first checked by some great calamity or other unexpected event which momentarily rivets his attention and forces him to think. On the other hand, he who habitually acts in obedience to the dictates of reason in matters of right and wrong, whose feelings are the pleasures of self-approval, will soon reach a point of refinement in conscience wherein right doing will be his first inclination and his greatest joy.

CHAPTER VIII.

THE WILL.

A MAN of genius is popularly thought to be one who is endowed with some peculiar intellectual quality, which fixes his destiny at such a height that, without hard work, he can easily outstrip his rivals. We approach much nearer to the absolute truth when we declare that if a man has an intellect generously though not lavishly endowed, and *a capacity for intense application*, he can become a genius. And the most encouraging element in this thought is, that this capacity for hard work is capable of development, because it is dependent upon the will and the will is capable of development. All men possess it to some degree, and all may by proper effort have it increased.

By the will we mean "the soul's capacity to determine the extent and kind of its own actions." In childhood this power is relatively small and should be exercised for only a brief period at a time; most of the actions are then impulsive, or at least non-voluntary. It is well that this is so, for a strong will should be coupled with a strong judgment. This latter the child does not possess, and he must therefore submit to the guidance of the maturer judgments of others. Having the faculty of self-direction in but a small degree, he is more easily diverted, and thus managed in accordance with reason at a time when it would be useless to attempt to reason

with him. But as his reason develops we should gradually withdraw from him the interference of outside authority. When we see him in error we may check him, but it is not wise to do so even then, unless we see that the error carries with it too severe consequences to warrant our letting him suffer them. Any other plan of exercising authority will render the child permanently dependent upon others, and will unfit him for the stern requirements of life.

It should be repeated here that, though we have treated the several capacities of the mind as if they were distinct powers simply operating in conjunction with each other, this is done merely to help us in our study of the complicated power called the mind. In this same way we analyze things in other sciences, and there is no more reason for our forgetting the unity of the mind than there is for forgetting the unity of other things which have been torn apart, at least in thought, for the purpose of study. At no place can this complication, and yet the essential unity, be better seen than in the study of deliberative action, which we are accustomed to call willed action, because its distinctive mark is that of control. In the first place, several alternative courses are presented to the mind (arousing the feelings); they may be, say, a day's journey, a day of sport, and a day of work with its resultant earnings. Each of these is pleasant and inviting. They all, therefore, act as solicitations to the person. But when they produce their effect upon his feelings, he cannot act in response to them all; so he exercises his mind (intelligence, thought power) in deciding upon the relative worths of the

courses. He is very fond of sports, but then when the day is done he will have nothing to show for it; he delights in travel, and this will bring him some permanent things to enjoy in remembrance and to talk about; he is not fond of work more than others are, and yet he has certain ambitions which money will help him to attain. These ambitions have reference to what is more enduring than anything else in his life, and he reflects that, with them accomplished, he can travel as much as he desires and can get more out of it than he is now prepared to get. Being a thoughtful person, he concludes that the last course is much the best course. Still the battle is not won; he must put forth his mental energy (will) in choosing what his good judgment has decided is best, and in repelling the strong inclinations of his life toward present pleasure in sport or travel; and he must persist in the exercise of his will till the end is reached and the task is fully executed. Persons fail many times in not putting forth the necessary energy to initiate a proper course of action; they fail, perhaps quite as often, by not persisting in the right course till the end is reached and the reward gained.

Though examples like the above can be seen every day in the people about us, still there are those who deny the freedom of the will. This is no place for discussion upon such a topic, but it will be well to examine some of the errors in the opinion and to set teachers right with respect to the meaning of a free will. To many, freedom means the privilege to do as one pleases. With such a meaning there is no free will, for we are all limited by our inborn and acquired capacity, by the de-

mands of environment, and by the inexorable requirements of time, space, etc. But the privilege to do as one pleases can mean nothing in a community of social beings but license and a rule of might. If each man starts with the privilege to do as he pleases, soon several will wish to do what will make demands upon others, what will require more than one at a given place at one time, etc.; now, it is simply a question of power, and then, the ones that are overpowered have their privileges denied them by others. To overcome such a reign of power and interference, law is necessary. This circumscribes the scope of action for each individual so as to prevent a clashing of interests, and to make each a partaker, in the highest degree, of the accomplishments of all. Freedom then becomes *that condition which is brought about by an implicit obedience to all just law*. Whether the law is moral, natural, or civil, the individual is free within each domain only in proportion to his obedience within that domain. He may be a free man in the civil sense and be in moral bondage. It is evident, then, that an increase in the number of just prohibitory laws which are enforced must mean an increase in popular freedom, because it circumscribes the field of action of the intruder by just so much — there being no just prohibitory laws excepting those which prohibit an infraction of other people's rights.

But when we speak of free will we cannot mean freedom even in the legitimate sense given above, for man has the power to disobey law (though he may be compelled to suffer the consequences of his disobedience), and we call this power his free will. Just what do we

mean, then, by free will? We mean man's capacity to select, from among the alternatives presented to him, that which he intends to follow.

But some object, saying, "Is not man bound to follow the strongest motive, and therefore is he not lacking in freedom?" What, then, does the strongest motive mean? Motives are not forces operating upon men to which those men are bound to surrender. Motives are conditions within the individual's own mind; they are not physical powers. A thing possesses motive worth for a man only in proportion as his mind responds to it, not in proportion to any energy inherent in it. Use anything as a motive for a class of persons; it will not affect them all with the same force. If used with the same person on two different occasions, it is not likely to affect him in the same manner both times. This is not because it is resisted more at one time than at another, or by one person more than by another. No resistance is put forth; the person is simply indifferent to it. If it were a physical power, it would operate upon them all alike, and upon any one with the same force each time; the only reason it would not produce the same external effect each time is, because the different persons resist it with different degrees of energy. But, if this is possible, and we see it actually done, then the motive might even be regarded as a physical force and the person would still be free, for his freedom is manifested in his resistance. That which gives to anything a value as a motive is the attitude of the individual's mind toward the thing. It is fair, then, to assert that a man always follows the strongest motive; but, at the same time, it

must be remembered that he makes it the strongest by directing his mind to it as he does, and in this part lies his free will.

By this it is not meant that a person is entirely untrammelled by environment or past experience. These are always entering as interferences; but they are merely conditions, and not forces of which man is the product. With an environment that encourages energetic growth in the right direction, and a persistent effort on the part of the individual, a man can accomplish more than he can if a great part of his energy is exhausted in resisting and altering the environing conditions which would drag him down. But the simple fact that he can rise above his environment, that he can become a power for good out of the very midst of an environment of evil, is evidence of his free will.

It is nearer the truth to assert that a man is at any time just what his past experiences (of which his free choices form an important item) have made him. If he has lived in bondage to evil habits, he will be enslaved; if he has lived in the pure atmosphere of a holy purpose, he will be elevated and pure in character; if he has been satisfied with superficial views of things, he will be superficial; if he has given himself up an easy prey to passing and uncertain moods, he will be a victim of indecision of character. In a word, whatever has entered into his experience has stamped itself indelibly upon his life and has done its share toward the formation of accumulated tendencies of that life. But this does not detract one iota from his free will. It simply means that his present entire condition is an effect of all his

past. If that present condition is in the main an undesirable one, it means that the man has that much more to overcome should he, in the exercise of his freedom, set about the formation of a desirable character; on the other hand, if that condition is one with a preponderance of right, it means that the individual will be supported by just that much in the use of his freedom in strengthening his character.

Adopting, then, the language of James Mark Baldwin, we can say: "Freedom, therefore, is a fact, if by it we mean the expression of one's self as conditioned by past choices and present environment. It is not a fact in any sense which denies that volition is thus conditioned, first, upon the actual content of consciousness as it swings down the tide of personal life and presses outward for motor expression; and second, upon the environing circumstances which draw the motor consciousness out. Free choice is a synthesis, the outcome of which is, in every case, conditioned upon its elements, but in no case caused by them. A logical inference is conditioned upon its premises, but it is not caused by them. Both inference and choice express the nature of the conscious principal and the unique method of its life."

But what reasons can be adduced for regarding the development of the will as important? In the first place, it is at the basis of all one's power of attention. It is granted that the mind cannot continue to give undivided attention, for a long time, to that which is uninteresting; but, at the same time, it is true that, if the will is strong, the attention can be directed to the

uninteresting thing, and its truth uncovered, so that, before the energy of a strong will is exhausted, the thing will become interesting. If study is to be valuable it must be made a serious business, and not mere child's play. This does not mean that it should be made uninteresting and uninviting, in order that it may serve to develop greater robustness of character. Food is not valuable in proportion as it is disgusting and nauseating; but between substantial food, that is palatable and inviting, and mere sweets, unfitted to serve as regular diet, there is a great difference. So study may be made a serious business, and, at the same time, be made invigorating, enjoyable, and rich with promise and hopefulness. The objection lies in an attempt to remove all of its difficulties, to save the child from all necessity of effort, and to toy him into learning. This may do as an attitude of a kindergarten, but, as the child advances, his highest joy should come from the consciousness of a developing power that can overcome difficulties, not from the realization that there is some one near him to remove them.

In the second place, a developed will is at the foundation of one's self-mastery in every domain. Evil inclinations are to be resisted and removed. To yield to them means to retard the growth of good character, and to enslave the person. Only a developed will can inhibit the expression and consequent strengthening of such inclinations. Tendencies to ease and indifference, when duties are pressing upon us, must be overcome. Only a will, habituated to acting vigorously in response to the dictates of reason, can be relied upon to accomplish this.

Whether the self-mastery is in the direction of concentrated effort toward the accomplishment of work, or the repression of inclinations which should not be gratified, the same strong will is requisite for either. Such self-control, it should be remembered, comes to most persons only by hard work persevered in for a long time. But, though it requires such unbroken and prolonged effort for most persons to win the victory of self-mastery, it pays large returns for the outlay. "He that is slow to anger is better than the mighty; and he that ruleth his spirit than he that taketh a city."

In the third place, the most important agent in the formation of what we call character is will. This capacity for self-direction, if strengthened, can overcome every other element which enters into the problem of character building. It is clearly recognized that one's inheritance may interfere greatly with his efforts at self-development. Abnormal tendencies, which interfere with the even balance of a life, may fall to one as a birthright. But the establishment of schools and reform institutions of every kind stands out as a public protest against the claim that one's inheritance settles unchangeably his character. These things are maintained as opportunities for persons who *will* to develop themselves into the best of which they are capable. No one will seriously argue that a person born with only one talent is capable of development into the splendid symmetrical manhood that may characterize the person born with ten talents. But it needs not a philosopher to maintain the claim that a person born with ten talents may, *if he lacks persevering industry*, fall far below the level of attainment

reached by an earnest worker born with much less of native endowment.

Man should not be compared with man in estimating his development. Each man should be compared with his own past. Not what absolute strength has been attained, but what proportion of increase has been made, determines the excellence of his progress. The school is doing its best work, and is aiming at the most practicable end, when it is so planned that it affords an opportunity for each pupil to make of himself the best of which he is capable. This, each child has a moral right to become; but the only power that will make it possible for him to attain such an end, even in the midst of the greatest opportunities, is this power of self-direction, — the will.

Neither is it forgotten that a hurtful environment enslaves many men, and serves as a great hindrance to the easy development of a pure character, in all. But this, too, must fail in its attempt to conquer the man of will. Poverty, filth, and moral pollution may be great and serious drawbacks to the development of manly character. Food, clothing, and the other necessities of life must be secured first to maintain life, before we can do anything toward lifting men to the level attainable by those who are more fortunately circumstanced. But in the very act of securing these things, the moral character may be developed into magnificent strength. And the will, which is requisite for their attainment, gets some of its best culture in the very activity rendered necessary by these demands. Not that we regard a training in the school of toil as necessary to the production of a

strong will ; but it is encouraging to remember that even the stern demands of existence may contain a hidden blessing. Wealth, as popularly measured, is simply an objective possession, and must not be regarded as an index of any strength of soul. A man who, because of adverse circumstances, may have failed to accumulate much objective wealth, may still get, as a return for his exercise of will, greater wealth of character than has ever entered into the thought of his more comfortable neighbor.

But, notwithstanding these objective differences, we still maintain that neither heredity nor environment can fix the destiny of a man. The most potent factor in settling that destiny, as evidenced by his character, is the man's own will. This power alone can overcome the effects of evil inheritance, and remove the objectionable elements in an undesirable environment.

Character might be briefly described as the sum of the habits which one has established in his life. By habits we must then include habits of thought and of feeling as well as of action. These settle what a man is at any given time, and what his potential capacities then are. If habit is so comprehensive a term in the establishment of a life, its formation must be of great moment to teachers. To this problem, then, we must next address ourselves.

In brief, a habit is established by repeatedly performing an act, and it is destroyed by refraining from the performance of the act. In no other way can a habit be established and in no other way can a habit that has been formed be removed. Simply to refrain from

action may not be sufficient for a life, but, whatever else is done, nothing will break down a habit but refraining from the action which has become habitual.

The most important thing to do at the outset, in the formation of a habit, is to *surround the child with everything at your command which will add to his strength and enlarge his confidence in ultimate success*. To this end the child should be assured of the teacher's interest and support. He will be greatly helped if he has the advantages of the habit pointed out to him. The enthusiasm of numbers, which may be secured by having several engaged in the formation of a given habit, will do much to insure success. The spirit of rivalry, which is so potent a factor in sports, may thus be reasonably employed. If he can be brought to sign a written pledge willingly, or to make a verbal promise to a friend, the course will be justified by the additional motive which it furnishes for faithfulness, and also by the importance which attaches to the end, the question of such promise being not a normal but only a prudential one. Any righteous course which will make the child enthusiastic in his undertaking and determined to succeed will be wise. Everything possible should be done to keep him in a vigorous and hopeful frame of mind.

When he is thus wisely started, he should be urged to *suffer no exceptions to occur*. Indecision of character, lack of persistency of effort, failure to respond when the conditions exist, are elements which will prove fatal to the formation of desirable habits. The attempt to "taper off" has proved to be the cause of utter defeat in many a life, struggling earnestly but unwisely for self-

mastery. Each lapse in the attempt to break down a bad habit (which can be safely done only by putting in its place a contrary good one) will undo more than can be repaired by many successes.

In the attempt to establish proper habits we should *begin as early as possible in life*; then we shall find the smallest number of disturbing conditions. While there are no strong inclinations established in any direction, it is easy to set the current of life flowing in the line of our choice. But every day that we allow to pass before beginning to give earnest attention to this matter increases the difficulty of our undertaking. Like Rip Van Winkle we may refuse to count this time, and deceive ourselves with the thought that, if we are not meaning to fix a habit, no habit is being formed. But then we forget that each day we are acting somehow, either in the direction of the habit which is to be formed later or in another direction, and that each act registers its effects upon our organism and leaves us, in consequence, either better or more poorly provided for the struggle of life. The simple fact of life is that we are every moment forming habits, whether we mean to or not, and if we do not rule our actions so as to form proper habits, the improper ones, formed during our time of neglect, will soon rule us. No truth is more certainly established than this, that a habit once formed tends to exclude the possibility of forming any contrary one, and that an act performed has left its permanent impress upon the life, and done its part toward the formation of a habit.

But little needs to be said in the way of definite

directions for the development of the will. From the outset, we should assume its presence in the child, and call upon him to exercise it. If he seems to be more than ordinarily lacking in strength of will, that fact will doubtless be manifested by his acting simply in response to his feelings. If he has an inclination to action in a certain questionable direction, he will follow that inclination, and offer as a sufficient reason for so doing that he feels like it. If he has no inclination to act when a duty calls him to do so, he will dismiss the obligation and offer as his reason that he does not feel like doing it.

When a person is found in such a state as this he needs teaching along several important lines. He needs to have his sense of obligation aroused. This can be done best by showing him the advantages accruing from the performance of duty, and the consequences which he must suffer for its neglect. Prudential reasons will appeal to a person until his larger enlightenment and moral sense reveal to him the real worth of right doing. We must not expect the little child to be judicious, so it is necessary that the teacher's judgment should be made to serve him, and this can be revealed through commands, backed up by rewards and punishments when necessary. In general, it is better to secure results, if possible, through the application of pleasure than through that of pain. But results must be secured, and, if the highest motive is found to be inoperative in any instance, resort must be had to a motive so far down the scale that it will meet the child's present needs, and receive from him a vigorous response.

During all this time the child should be taught the

reasons for the course which he is directed to follow. Thus he will be educated to act in the light of reason, rather than from the simple matter of feeling. It is not meant that we should permit the child to argue when he is directed to act, and that we should give him our reasons as a condition of receiving his obedience. Rather, he should obey because a righteous authority has directed him to do so ; and, when he has obeyed, as well as at times when no commands have been issued, we should educate him to know the reasons that guide our course. This will usually be found to be the only wise corrective for what is called a "self-willed child." It would be possible to make such a child yield to superior force, but then we arouse in him all the bitter feelings of antagonism which he can command ; and, when the force is even momentarily withdrawn, he rebounds to his evil course as a bow that has been drawn. We have produced no change in the enlightenment of the child, and he is as much bound as ever to have his own way, regardless of the cost to others or of the sacrifice of his own reason. It may be necessary to apply superior force in order to get him to listen to reason, but we should regard our task as only just begun when we have him at that point. Breaking the will might possibly produce a manageable slave, cowering under the lash of a hard taskmaster ; but only the enlightenment of the will can make a free man.

In all the development of the will, whether it be in forming the habit of earnest application or in strengthening the power of self-control, there is no more potent factor than personal example. Children are quite ready

readers of human character ; and, when they see their elders prospering, either in the midst of a life of idleness or a life of self-indulgence, they are likely to argue that, if success and satisfaction in life can be secured at so small a cost, there is not much use of their paying a higher price for them. Upon the teacher, then, rests, in an especial manner, the responsibility of living and acting in such a way that the children, taking their pattern from him, will employ their wills always in response to an enlightened reason, and thus develop within themselves that power which can shape their destiny.

CHAPTER IX.

ATTENTION.

IF by a faculty we mean the soul's capacity or ability to do a distinct kind of work, it is evident that attention should not be classed as a faculty. There is no new kind of work involved in an exercise of attention; it is simply a name for an especial manner of doing the various forms of work already indicated. We cannot perceive, remember, imagine, and think, and, in addition to all these, give attention. To attend is rather to do any of these others *with care*. To attend to the note of a bird means to listen to it with care, — put effort and thought into the listening. To attend to a lesson means to look at what is presented in it, listen to what is said about it, think about what is involved in it, and *do all these things with care and energy*. Each of the intellectual faculties furnishes its own peculiar type of knowledge; attention furnishes nothing new as they do. If we are not engaged in earnest with anything, if we do not look, listen, think, imagine, or exercise any of our powers with a measurable degree of concentration, we are not exercising attention. If we do focus our consciousness through the avenue of any of the faculties, we are exercising attention. Attention is thus seen to be rather a condition under which the faculties may operate than a separate faculty. But, if attention is not to be classed as a faculty, it is so important as an

element in learning that it can with profit engage our thought in this place.

It is customary to divide attention into two classes or phases called reflex or non-voluntary attention and voluntary attention. The reflex form is that which is *drawn* from us as a nervous response to a stimulus from without, and is dependent chiefly upon some element within the thing to which attention is given. As would naturally be expected, therefore, it is flitting, changeable, uncertain, — a sort of butterfly activity. It is to be expected in children ; and, when it predominates and is developed, it accounts for the need of a large and varied assortment of playthings for the nursery. Little and unimportant things have some attraction, but it is only for a moment, and then they must be dismissed to make way for others, and thus a constant round of newness is kept up. Clearly, then, whoever would rely upon the non-voluntary attention of his pupils as the way to successful teaching must surround himself with an almost endless array of attractive and varied devices, and develop within himself great skill in their use. But he must also expect, if this is relied upon exclusively, to have as the result of his labors a class of young people contented only when attracted, unfitted for the sterner requirements of life, and unmoved by anything like the imperatives of duty.

The voluntary attention is that which is *given* by us to an object of our choice, and which is not primarily dependent upon any element within the thing attended to, but, rather, upon our own effort. From this we can readily judge that it is permanent, certain, and capable

of giving a stability to character which difficulties cannot easily baffle. This type of attention is to be looked for only in those of developed strength, and is rather an end to be secured by our teaching than a condition to be expected in the child. It is this more than any other endowment that distinguishes the man of genius from the ordinary man. It is this phase of attention that we should strive to develop through our teaching. Indeed, the results of developed reflex attention are so unsatisfactory, they give to the individual so little command of himself and make him so unfitted to command others, they rob him so completely of his proper independence and force him to rely so much upon circumstances, that it seems an unwise use of terms to call it attention; because whatever is done to strengthen within a person the habit of non-voluntary attention and to encourage him to rest in it, is just so much toward erecting a barrier in the way of that strength and force of character which mark the person of developed voluntary attention.

We are naturally attracted to some things and not to others, and, as our minds are habitually active, we may expect them to act in the line of these attractions. It is proper that we should make use of such tendencies, in selecting material that shall win to study and effort as against idleness and indifference; but we should remember that these are only expedients justified by circumstances, and not conditions to be developed. If we can develop within a child the determination to conquer, and we can do so by means of a pleasure that will overcome inertia and arouse activity, we are justified in employing the pleasure; but we must guard carefully against

making pleasure the sole condition of activity. The pupil who can by force of will direct his thought to that which should be done, whether it is pleasant to do or not, is the pupil who is fitted to succeed in life. The one who through habit must permit his thought to be swayed to and fro, because of winning elements that appear in his environment, is a slave to circumstances. He does not yet know what freedom is. It is not meant by this that we should resist things simply because they are interesting ; that which interests and attracts us may be a very proper object of voluntary attention. But it is meant to teach that we are not to refuse attention to things because they fail to present elements of interest.

With the mind thoughtfully centered upon an object of study, elements previously unseen will be made to appear ; about these, new interests will center ; and thus it is seen that well-directed attention develops interest. It is generally found true that the person most vitally interested in any department of learning is the person who has most fully mastered it. What we know best we are usually most interested in, and that not because the interest is primal, but because, having given the subject our undivided attention, we have been rewarded with the knowledge and with the accompanying interest. It is true that we ought not to expect from children undivided attention to that which continues uninteresting ; but we should expect them to strive, because the thing is present to be done, and, having the will thus wisely exercised, we may add to the employment all the joy and hopefulness that we can. But let us remember

that the most lasting joy is the joy of overcoming obstacles in the way of our growth, and the most buoyant hopefulness is that which results from the consciousness of a deserved supremacy. A reasonable inference from this is, that we should so gauge the capacity of the learner and the difficulty of the assigned task that we will not demand the impossible or the too difficult; another is, that we should resort to artificial attractions only when the attention cannot be sufficiently aroused by the natural attraction which attends mastered difficulties.

One other item of great moment deserves specific treatment in the discussion of attention. It is mind-wandering. This is the condition that exists whenever a person, presumably engaged in some serious occupation, awakes to find that he has not been thinking about that which he seems to have been doing, but has been following a train of thought that simply happened to cross his mind. Persons with whom such practices have become habitual often deplore the fact and wish themselves well rid of the habit, but the methods they pursue tend constantly to strengthen the disposition, even while they are lamenting their bondage. They begin a study; they pass with success over several pages; at last the act of turning to the next page arouses them, and they discover that they know nothing of what they seemed to be looking at upon the previous page. What, now, is the ordinary manner of treating themselves? Too frequently it is to allow the usurping train of thought to be indulged in till it has been finished; then they leisurely betake themselves to the task which ought never to

have been dismissed, and congratulate themselves because they have not abandoned it entirely. The better way, indeed, the only way, to effectually correct mind-wandering is to apply a more vigorous remedy at one particular point. Just as soon as the person becomes aware of the fact that his mind is not upon that which he seems to be doing, he should check himself. This may require severe measures, but it is well worth the effort. He should use any expedient at his command, but by all means he should stop himself *before the intruding train of thought has been carried to its issue*. Let him close his eyes, clench his fists, change his bodily attitude, utter aloud each word upon the page before him, point the finger with energy upon each word as he says it—in short, resort to any reasonable device for keeping himself at the assigned task till it is finished. Then, if he wishes, he may take up the line of thought that was suggested, but not before. This does not mean that we are never to allow ourselves the pleasure of leisurely following our trains of suggested thoughts; that may be a very pleasant and harmless pastime. But it does mean that we should absolutely never give way to intruding lines of suggestion, which cross our course when we are engaged in serious study. It is the *habit* of undivided attention that we should seek to cultivate, and the pupil who allows distracting elements to intrude, even to the extent of interrupting his study by habitually turning the head to see who is entering a room, is thereby robbing himself of a strength which he might possess.

What, now, are the specific guides for the culture of this important power of attention?

1. Vary the work so as not to produce unnecessary weariness. For any one set of pupils have memory studies, art studies, reasoning studies, etc., properly alternated.

2. Let periods of study alternate with periods of physical and mental freedom. Whenever the child studies, encourage him to work with energy; then afford him proper time to cease work entirely. Do not customarily allow work to continue and drag along indefinitely. Short and decisive periods of work followed by definite periods of complete relaxation will strengthen the power and the habit of attention.

3. If signs of ill health or overwork are observed, relieve the pupil or remove him for the time from the scene of intense mental activity. This applies especially to the child about thirteen or fourteen years of age, who is easily affected by nervous disorders, and particularly so if he is found to have any physical weakness or if his normal growth is suddenly hindered. Intense effort at this time is likely to prove detrimental to the child's later well-being.

4. Afford all possible occasions for the child to use his new knowledge. When the child can be led to see that what he is learning fits him for the things older people do, it will give to his studies new interests and will encourage attention.

5. So prepare for your teaching that you can generally be free from the text-book or other aids while before your class. This freedom will arouse the pupil's confidence and encourage him to a like strength and independence. Pupils will not generally attend to that which they are led to think is not worth while.

6. Frequently resort to competitive exercises such as will tax the powers of pupils. Let these be opportunities for tests of strength rather than required duties. They may be made up of difficult mathematical problems, pronunciation, spelling, etc.

7. In teaching make your statements so clear and definite that the pupil need not be perplexed and disturbed by words. Mental confusion leads to hopelessness, and in children it will soon paralyze effort.

8. Special drill exercises for the culture of attention may be used with profit. The following will be found valuable : Rapid work in the simpler parts of arithmetic, such as addition, subtraction, multiplication, division, fractions, etc. ; spelling by having each child in succession name one letter of the word ; pronouncing sentences or lists of unrelated words, and having children reproduce them orally or in writing (such sentences or lists of words must be quite short at first and be gradually lengthened) ; presenting complicated objects or sets of objects for a very brief period of time and having pupils name all they can see ; performing before the class some action which will require voice, hands, feet, etc., and having children describe fully what they have observed. Such exercises should not be kept up longer than two or three minutes at a time, and should be done with all the force the child can summon. If it is made to appear as a game, the best results will generally be secured. It is wise for the teacher to keep an exact record of the best the class can do in the several exercises, and at intervals to note their progress.

9. When the class specially needs training along the

line of attention, let the teacher ask questions before naming the one who is to recite. This demands a like effort from all, but is a useless tax upon the energies of children if invariably used when the class is attentive without it.

10. Be careful not to divert the child's thought from the real purpose of the lesson. Teaching by experiment or other illustration sometimes draws the child's thought away from the truth to be impressed and rivets it upon the sound or flash or other attraction in the experiment. He is giving attention, but it is to the wrong thing.

PART II.

GENERAL PHILOSOPHY OF METHOD.

CHAPTER X.

THE NOTION, OR CONCEPT.

IN the order of reality as it is found in the world, the units are commonly spoken of as "things." These may be material bodies, immaterial relations and forces, or even states of mind. These realities or things about which we are said to think are always single and concrete — exist as individuals. But these individuals possess likenesses which serve as the basis of what are termed "classes." These classes do not exist above the things as something superior to them, nor are they in any way separated from them; in so far as they can be said to exist at all, they exist *in* the things which are spoken of as members of the class. It is well for the student to learn at the outset that classes are not things in the sense that individuals are, and that classes do not exist in the same manner in which things are said to exist. It is not possible to find in the world of realities this horse, that horse, and the other horse, *and, side by side with these, horse in general.* But, though classes have no such separate existence as things have, they are real. The class is merely the sum total of the

similar individuals which compose it, *considered in their related character*.

The human intellect can be exercised, therefore, only in connection with truth considered either in reference to individual realities, or in reference to classes as above described. If this mental activity is put forth simply to *represent* single things or classes of things, the product is called an idea, a notion, or a concept. Now, in forming these notions, we may represent the individual and its constituent parts, to the neglect of the class idea, and the product is called an individual notion, an individual concept, or an image. Again, we may dwell upon the *likenesses* among the individuals of a class to such an extent as to lose sight of the peculiarities of these individuals ; in this case we are emphasizing the class idea, and the product is called a general notion or general concept. In language each of these notions is expressed by words or by phrases, but not by sentences.

If the word or phrase stands for a single thing, as Julius Cæsar, this block, Pennsylvania, that kind act of A., it names an individual notion.

If the word or phrase stands for a class of things, as man, block, state, the kindness of man, it names a general notion.

But we are able to do more than merely *represent* mentally either single things or classes. We are able to compare the clearly formed notions with each other, and the product of this comparison, or noting of relations, is called a judgment. In language the judgment is expressed by a sentence. The treatment of judgments will be postponed to a later section (see page 117).

In order to add clearness to this discussion we will examine the different mental faculties which are employed in producing notions, and thus learn which type of notion each faculty is capable of producing.

1. When I think about any matter, as a problem in arithmetic, a pleasant excursion, the weather, or the righteousness of my own desires, I am able to know that thinking is what is taking place at the time ; as I have experiences of sadness or joy, of hope or fear, of pity or contempt, or any other form of feeling, I am immediately aware of it ; if my will is exercised either in directing action or in preventing it, that also is known to me at the time. The power we all possess of thus knowing our own states of mind is called by many consciousness. All that we can be conscious of at any given time is the actual mental state present at that time. Conscious suffering must be actual suffering. Consciousness of a mental power can mean nothing except when the power is in exercise. Consciousness does not reveal to man the *meaning* of any mental state, its significance in terms of a world of things ; it reports to him the *existence* of a certain mental state as a fact of his personal experience, and that fact, not its significance, is the object of knowledge. This being true, it is evident that consciousness gives to us only individual notions.

2. Besides the world of ideas known in consciousness, there is also a world of material things that may be known. Objects that are about us affect our organs of sense, and thus produce in us states of mind called sensations. *Perception* is the power we have of interpreting the raw materials of sensation and thus of knowing a

world of things immediately present to our senses. But, since only individuals exist in the world of things, the knowledge thus acquired is of individuals only, never of classes, and hence perception furnishes us the individual notion. By this it is not meant that we can thoroughly know individuals without any reference to the corresponding class ideas ; the interpretation of a sense impression requires the use of our class notions. But since the *entire mind* is active in all mental activities, we name each act by naming the dominant phase in it ; and, since that which occupies the center of attention is that to which the mind is said to be predominantly directed, we speak of knowing through any process that which is the center of our effort, no matter how many aids we may summon in the effort. In order to know the object before me as a pear, I must call into service my general notion of pear, and interpret, in the light of that notion, the various impressions received from this one object. But still, in seeing a pear, my attention is directed less to the notions within my mind and more to the object which is said to be affecting my mind ; less to the various processes involved in the complex act of knowing and more to the thing known, — the individual pear. Thus we are justified in saying that perception deals only with individuals, and hence furnishes us individual notions.

3. All the ideas of the mind may be reproduced, and, when reproduced, they may be recognized. This power to recognize objects and ideas, or to know them again as having been known before, is called memory. Since the memory is a faculty which does not acquire *new* truth, but merely recognizes the old when it is repro-

duced, we need not consider the type of notion with which it deals. It is concerned with the reinstated notions from all the other faculties.

4. In consciousness and in perception the things known are present, and are immediately affecting the mind which knows them. But in our knowing we are not confined to the things which may be immediately recognized; our knowledge can extend to things which do not affect our senses at the time, and which are therefore said to be absent from us. Following an accurate verbal description we may, by combining the elements of past experiences, come to know things which we have never witnessed,—the customs of a foreign people, the architecture of a great city, the landscape in a distant clime, etc. But even this is not the end. That which does not really exist can, by virtue of this power to combine old mental elements into new mental wholes, be anticipated in thought, and when this thought becomes actualized in a thing, we have the product of man's invention. This power which the soul possesses of combining old ideas into new wholes is called imagination. But, as the product of imagination is always a definite mental picture, and as such pictures are always the representatives of single things (never of classes), the imagination furnishes only individual notions.

5. But one other mental faculty concerned in the formation of notions remains to be considered; that is the faculty of thought. As we learned in a previous chapter, there are three stages of thought,—conception, judgment, and reasoning,—which give us three products of varying complexity. But as only one of these, con-

ception, is employed in representing reality, while the other two stages unfold truths about reality, we shall occupy ourselves in this place with the first only. It is not to be understood that these three operations are carried on separately, that conception as an activity is completed and that judgment then begins. Rather, we *think*, and in the process the predominant element, no matter how many adjuncts have been used, is the formation of a notion; this act we call conceiving, and the power or faculty we call conception. Again, we *think*, and, in the process, the predominant element is the comparing of concepts in such a manner as to produce a thought which is capable of being expressed in a sentence; this act of thought we call judging, and the product secured, as well as the power to secure it, we call judgment. In any concrete thought experience carried on for a definite time, it is not possible to tell just what part of it is conceiving and what part is judging; we can separate these only by an arbitrary mental analysis of experience, just as in fact it is not possible to separate the form and the color of the object before me, though I can think of them as if they did exist apart. In the third place, we *think*, and the predominant element is the comparing of judgments in such a way as to produce another thought capable again of being expressed in a sentence; this act of thought, which consists in the comparison of judgments, we call reasoning. But all that directly concerns us for the present is this simplest form of thought, that which is employed in representing reality, but is not concerned in unfolding truths about reality.

In returning from this seeming digression, which is intended to clear the way for future discussion by anticipating difficulties sure to arise in practice, let me repeat, that any *mental content which serves to represent realities, either as individuals or in classes, is called a notion or concept*. If this mental content is made to represent a single thing, if it is a definite mental image of either perception or imagination, it is called an individual notion or individual concept. If it is made to represent a class of things, if it is not reducible to a single definite mental image, it is called a general notion or general concept. The mental faculty required for the production of such general notions or general concepts is thought, but thought in the capacity of conception.

But even though general concepts are not definite mental images, there is a pronounced tendency on the part of learners to represent them by images. This tendency arises doubtless from the fact that so much of our mental habit has been developed in imaging single things, and also from the fact that it is easier to let an image stand for a class in a vague sort of way than it is to think the class comprehensively. Accordingly, when a class name like horse is mentioned and our minds are allowed to dwell upon what it signifies, we have a series of images of individual horses pass before our minds. These represent horses which differ in color, size, attitudes, etc., and yet with each image comes the distinct feeling of its inadequacy as a representative of the class. Rather we feel that it takes them all, and more than we have time for, to represent the meaning of the

word horse. In this we find that in a vague and indefinite way we are attending to the elements of similarity in our images, and are ignoring the qualities that do not count for anything in the make-up of the significance of horse.

Since this tendency is so strong in us all, the best we can do is to aid the learner in directing his attention to the marks of similarity in his mental images, and not to whatever peculiarities may happen to strike his fancy. In this the teacher will gain a great advantage by using what may be called the exact concepts, — those made up of attributes fully and distinctly known, such as triangle, square, etc. We know just the elements that enter into the notion, and hence into the definition, of square and of triangle. We can definitely enumerate all these for the learner and direct his attention away from size, position, etc., which have nothing whatever to do with the formation of the real meaning of the word. By using these exact mathematical concepts as the means of showing him what he should strive after in thinking the concept, we prepare him for dealing with the larger class of inexact concepts, — those made up of attributes that are not fully and distinctly known, but that can be only vaguely approximated, such as house, book, pleasure, etc.

Definition and Description Distinguished.

The distinction between exact and inexact concepts affords an opportunity to emphasize the difference between logical definition and mere description. Both of

these are valuable, but they should not be confused. A definition notes all the essential marks of a thing, and only these; it is designed to settle a thing in its compass and extent. Thus we can clearly define the exact concepts because we know exactly what the qualities are that enter into their formation; as, a square is a plane figure bounded by four equal sides and having four right angles. But when we endeavor to give verbal expression to the inexact concepts, such as house, pin, jar, etc., we find it impossible to distinguish between the essential and the non-essential qualities; hence complete definitions cannot be given. For all such, then, the best we can do is to describe them as accurately as possible. A description is not limited to an enumeration of only the essential marks of a thing, but it may take larger liberties and emphasize oddities. It "enters into striking particulars with a view to interest or impress by graphic effect." It is well for teachers to keep this distinction clearly in mind, and not endeavor to secure exact definition where only a description is possible; neither should they generally be content with an approximate description where the exactness of definition is attainable.

Content and Extent of Notions.

Clearness of great pedagogical value will be added to this discussion if we distinguish between the content and the extent of our class notions, or general concepts. It is evident that when I use the word quadrilateral I may think either of the appropriate four-sided geomet-

rical figures, which I can picture in great number and variety, or of the quality of four-sidedness which belongs to certain geometrical figures. In the first case my mind is directed to the *individual things* which possess the qualities entitling them to be called quadrilaterals; in the other case my mind is directed to the *qualities* which the word quadrilateral really means, and, on account of the possession of which, any figure is called a quadrilateral. In the first case my mind dwells upon the extent of the class term quadrilateral; in the second case, upon the content of the class term. Since a concept or general notion is the mental content which answers to a class of things, and a class term is the word which symbolizes both the class of things and the corresponding concept, we may speak without distinction of the content and extent of a class term or of a concept; accordingly,

The *content* of a class term is the sum of attributes which things must possess in order that they may be designated by the word in question.

The *extent* of a class term is the entire set of individual things to which the word is applied. The reason why a class term is applicable to some individuals and not to others is because the former ones each possess the attributes which constitute the content of the class term or word, and the latter ones do not.

The word square signifies (in extent) this, that, and the other plane figure possessing four equal sides and four right angles. It signifies (in content) the following attributes: plane figure, fourness of sides and angles, equality of sides and rightness of angles.

When the meaning of any word is being developed it is important for the teacher to know whether the child is thinking of its content or of its extent. In order to get the real significance of a word he must, of course, dwell upon the content ; but in order to be able to apply it intelligently, he must be able to think of the individuals to which it rightly belongs, — its extent. Errors may arise from the child's getting his notions either too comprehensive or not comprehensive enough in content, as well as either too wide or too narrow in extent. If a child who has seen only red roses hears the word, rose, applied to them until he associates the word with these red objects, he will get a notion that is too comprehensive in content, because it includes the element redness, and this element of a particular color does not belong to roses. If a child has learned to associate the word, square, with a four-sided figure that has right angles, it is evident that this notion of square is lacking in content, because it fails to embrace the necessary element of equality of sides. Because of this omission, the word, square, would be used by him in reference to all rectangles, and would, therefore, lead to numerous errors. If a child comprehends all men in the word, papa, it is evident that his attention is directed to the extent of the word, and his notion of papa is too wide in extent. If he denies to certain men the title, man, declaring, " You not man ; papa man," it is clear that his notion of man is too narrow in extent. The remedy for all these errors is the same, — reference to appropriate realities, careful analysis of these realities, and growing exactness in the definition of our terms.

Variation of Content and Extent of Notions.

It will be seen by examining the above illustrations that, if a learner comprehends in his notion too many elements, the extent of that word will be too narrow; that is, if he thinks that the word means more elements than it really does mean, he will not apply the word to as many things as are properly embraced in its extension. This observation has led many writers to declare that the greater the content of any word, the smaller the extent; and the smaller the content, the greater the extent. Or, more briefly, the content and extent of a notion vary inversely. This statement deserves careful examination.

The treatment can be most clearly given if we speak of the meaning of a word (which corresponds to the content of a notion), and the application of a word (which corresponds to the extent of a notion). Take the word, island: if this signifies to a child a grass-covered portion of ground surrounded by water, he attributes to the word more meaning than he should, and therefore he does not apply it to as many things as he should. He would not apply it to sandy or stony islands because of the absence of grass. Now, if upon further study he should drop the idea of grass covering, and thus narrow the meaning, he would widen the application to its legitimate sphere. It is because the child's notion is erroneous in content that it is at first too narrow in extent; by making it accord in content with the true meaning of the word, he widens its extent to the proper

application of the word. In all this the meaning of the word remains unaltered, though, through the progress of his learning, he gradually comes to think differently about it. The reader can further illustrate this distinction if he will take words, and, by admitting too few or too many elements into their meaning, try their application; then he can correct the mistaken content and note the change in extent or application.

Next let us take the word, post, with a changing history which has been accumulating meanings. First, the word meant a piece of timber, or other solid substance, placed firmly in an upright position. Next, and without losing any of the first meaning, it came to mean the place at which a body of troops is permanently located. Another change, and it came to mean (without losing any of its former significance) a messenger who goes from station to station; as, one who regularly carries letters from one place to another. Retaining all of these meanings, the next development causes it to embrace the carriage by which mail is transported. Now, it seems clear that if the child learns the first of these meanings, which taken alone is correct, the word, post, will have for him a given content and extent; if he adds the other meanings in succession, not needing to alter what was learned before, he will enrich the content of his notion of post and *at the same time widen its extent*. This is true because with each new element of meaning there was no interference with former meanings, but there was a new application in an added field.

The importance that attaches to this distinction is seen when we remember that the enrichment of a child's

vocabulary is just as essential to his intellectual growth as the enlargement of it. We enrich a vocabulary when we give added significance to old words ; we enlarge a vocabulary when we add new words to it. The deepening of thought which accompanies enrichment is even more vital to a child's educational well-being than the broadening which accompanies enlargement, for the latter may be associated with superficiality. Teachers need to avoid the mistake of thinking that whenever they thus enrich a child's notion and render it more exact and complete, they necessarily narrow its application. This is true only when the enrichment is accomplished by deserting former errors.

This relation of content to extent should also be noted in reference to a *series* of related words. In the series, living thing, animal, quadruped, dog, each member embraces more elements of meaning than the one before it, while each member refers to fewer things than the one before it. Thus it is clear that in a series of related concepts, if we enlarge the content down the series, we narrow the extent ; and, if we narrow the content, we enlarge the extent. But it should be noted that this refers to no change whatever in any of the concepts ; it merely compares broader and narrower concepts with each other.

CHAPTER XI.

DISTINCTIONS OF METHOD.

Based upon the Truths of the Concept.

THERE are four distinct methods of teaching, which can be understood only in the light of a knowledge of the nature and the relation of individual concepts and general concepts. They are the analytic method, synthetic method, inductive method, and deductive method. It is the aim of this chapter to show what these different methods mean, how they are related to each other, and in what order the contrasted ones should be employed.

The *analytic method* of teaching is the method in which we set out with individuals or wholes, and proceed to a consideration of the parts of which they are composed. Starting with a flower and proceeding to the study of its parts — calyx, corolla, stamens, pistil, etc. — is an example of analytic teaching. As examples of the analytic method of procedure in other studies may be mentioned: taking a sentence in grammar and proceeding from that to a consideration of its parts, — subject, copula, predicate, modifiers, etc. ; taking a problem in arithmetic and proceeding to its solution by the method of independent analysis ; taking a state or country in geography and proceeding to learn the several parts (the names, locations, and characteristics of the particular rivers, mountains, towns, etc.) of which it is composed. In an analytic method of teaching we have

given us the individuals or wholes, which are simply *the parts in their proper relations to each other*, and we proceed to consider each of these parts as if it were then a separate thing.

The *synthetic method* of teaching is the method in which we set out with the dissociated parts of things and proceed to bring these into proper relation to each other, so as to construct as a final product the individual. Having a pile of dissociated bones, studying the function of each, and then bringing them into such relation with one another as to produce finally the human skeleton, is an example of a synthetic method of teaching. Taking isolated words and building possible sentences with them is a synthetic procedure. Other examples are: teaching letters and then from these constructing certain words; learning about a particular river, its surroundings, the towns upon its banks, and further particular items, until we have built up a picture of some particular state.

It should be noted that, in the analytic method, the parts are given in their relation to each other, and, hence, the relations are clearly present to be discovered; the functions of the several parts as they affect one another are thus made manifest. In the synthetic method the parts are given out of their proper relation to each other, and it is assumed that they can be studied in such isolation, and that their several relations can be discovered in the process of bringing them together to construct the unit, or individual thing. It should also be noted that *these two methods have to do only with the mental movement between single things and their parts*; the idea of classification does not enter into either of them.

The *inductive method* of teaching is the method in which we set out with individual things, and by a comparative study of several individuals — noting likenesses and differences — develop general notions or generalizations ; or, we begin with generalizations of a given order and by their comparative study we arrive at still wider generalizations. Taking several observable portions of land and, from a comparative study of these, deriving the notion and the definition of island, is an inductive procedure. Solving several problems in arithmetic by independent analysis, and then, by comparison of their processes, formulating a rule for the solution of such problems, is an inductive process. Generalizing definitions, rules, laws, and principles, from a comparative study of facts, is inductive. The very essence of induction is *comparison of members of a class* with a view to discovering similar elements.

The *deductive method* of teaching is the method in which we set out with generalizations (definitions, rules, laws, or principles) and proceed to their application in individual cases. As examples of the deductive method we may mention : committing rules in arithmetic and then applying them to the solution of problems ; studying the definitions of geography from a book and then proceeding to find them illustrated in the land and water forms about the school ; reading the generalizations about the human body, which are contained in the ordinary works on physiology, and then proceeding to examine our own bodies in order to verify them ; studying botany by first reading the book statements about plants, and following this by an examination of specimens

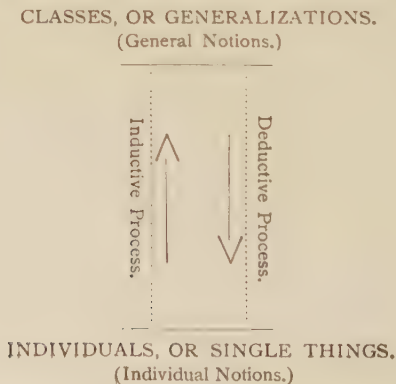
of the plants previously described; starting with the axioms of mathematics and proceeding by a demonstrative process to principles, rules, and the solution of problems.

A careful consideration of the above definitions and the examples cited will enable the learner to understand that *the terms, induction and deduction, apply only to those mental movements which involve a passage from generalizations, never to the mental movements between individual things and their several parts.*

The Four Methods Distinguished.

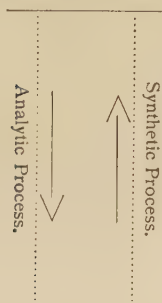
Much theoretical confusion and not a little practical blundering in pedagogy results from the failure to discriminate clearly between these two sets of related methods of teaching. Analytic teaching is thought to be identical with deductive teaching; and synthetic teaching with inductive teaching.

The accompanying diagram will add clearness to this discussion and be made the basis of much that follows :—



INDIVIDUALS, OR SINGLE THINGS.

(Individual Notions.)



PARTS, OF WHICH THE INDIVIDUALS ARE COMPOSED.

A study of the diagram will reveal the fact that only truth which has reference to classes of things can be treated by induction or deduction ; and only truth which has reference to single things and their parts can be mastered by an analytic or a synthetic process. Since individuals need to be comprehended (in so far as this is possible in their individual character) before they can be compared for the purpose of making inductive generalizations, it will be seen that, in an inductive process, the process of analysis may be involved. It is further evident that in an inductive process there is a certain bringing together of elements, which looks much like an act of synthesis. These elements, which have been found to be the similar elements in several individuals, are taken in their collective capacity as the ground of the generalization ; indeed, the generalization is simply a truth which embraces in its content these several elements. But, though this inductive process looks much

like a synthetic act, there are numerous synthetic acts which do not partake in the least of the vital parts of an inductive process, which vital parts are *comparison of several individuals*, and *generalization of a truth which is the outgrowth of such comparison*.

Illustration: We may give to a child a column of dissociated words and have him put them into suitable relations with one another and thus synthetically construct a given sentence. Other columns of words may be given and from these other individual sentences may be synthetically formed. But in every instance the product is a grammatical unit, built up of just the parts which the child put into it, no more and no less. To drop one of the pieces (words) or to add one is to produce a different resulting unit. When one of these units (sentences) is being built out of the words which are to compose it, all the others are disregarded. In thus creating units out of parts, synthesis has accomplished all of which it is capable.

These sentences may be taken and, by the help of the teacher, who knows just where he wishes to lead the child in his thinking, the child may discover certain marks of similarity which will enable him to put the sentences into groups, — those which express truth, those which ask questions, etc. Now, with his attention directed to these similarities, and away from all the non-essential differences, he may be given the words, declarative, interrogative, etc., and then be led to define them; as, a declarative sentence is one which expresses a thought, or, a declarative sentence is one which affirms or denies. In this work, which is inductive, it should be

specially noted that the product secured (the definition) is not limited in its application to the cases we have examined, but that it comprehends all cases that have the required marks, wherever and whenever they may be found. It is not in any true sense, as each sentence above is, made up of the elements that were considered together in its production. If in the work above we had taken different words, we should have produced different sentences; but in this study any other appropriate sentences would do just as well as the ones that were used, and we could secure through their use just the results (the definitions) given above. The result of the synthetic process is a distinct imageable unit; the result of the inductive process is a generalization. By the synthetic process we can construct individual notions; by the inductive process we develop general notions. Just so the deductive method differs from the analytic method. In deduction we have a generalization to start with, and our process consists in applying this generalization to the mastery of new individual instances; in analysis we have a given unit to start with, and our process consists in separating it into its several constituent parts and viewing each of these parts as if it were a distinct individual.

Thus far in the discussion reference has been made only to individual and general *notions*. For pedagogy it is necessary that we extend this application into a wider domain and embrace *judgments* as well. Most of our teaching is concerned with truth, and truth appears in the form of the judgment and is expressed by the sentence.

In examining any lot of declarative sentences (propositions) — such as

1. Horses are quadrupeds.
2. Pennsylvania is a very wealthy state.
3. A triangle is a plane figure having three sides and three angles.
4. "Dot" is a very beautiful cow.
5. Virtue is its own reward.
6. That act of Mr. A. was a splendid mark of manliness —

we find that their subjects name notions that are either individual or general. If the subject names a distinct imageable thing, it is then a logically singular term; if it names a class, and therefore a non-imageable quantity, it is a general term. Reference to the sentences above will reveal the fact that the subjects of 2, 4, and 6 are logically singular (individual terms), while the subjects of 1, 3, and 5 are logically universal (general terms). Now since classes cannot be observed, any element expressed by a general term is a non-observable element. On the other hand, since single things (individuals) are observable quantities, the elements expressed by singular terms are observable elements. The truth of the propositions 2, 4, and 6 may be verified by observation; the truths of the propositions 1, 3, and 5 cannot be so verified. We may observe *this horse* and thus learn that it is a quadruped. (Of course this implies that we come to the observation with a knowledge of the notion quadruped.) But it requires a process of generalization to arrive at the truth, Horses are quadrupeds. We may observe a person performing a virtuous act and note the

reward which attends it in the quiet and satisfaction of his own consciousness, as this satisfaction is revealed in his acts ; but an act of generalization from just such data is necessary in order to arrive at the truth, Virtue is its own reward. No induction is possible as a means of establishing the truth of a proposition whose subject is a logically singular term. In this discussion no reference is made to the predicates of the propositions ; all the attention is directed to the subjects. This is because the predicate is always assumed to be known, and the learning has direct reference, therefore, to the part named by the subject term. The only form of judgment that clearly adds to our fund of knowledge is the synthetic judgment ; that is, one whose predicate is wider in meaning than the subject. In all such judgments the predicates are supposed to be known, and the act of judgment consists in subsuming (including) the new subject under the old predicate ; that is, in discovering their thought relation. If any desired predicate is not known, we make it the subject of another proposition in the act of making it known ; then it is in readiness to be used as a predicate for the sentence which is engaging our thought.

To sum up, therefore, we may say that *any judgment whose subject is logically singular may be viewed in the same light as an individual notion ; and any judgment whose subject is logically universal may be viewed in the same light as a general notion.* What has been said, therefore, about the methods applicable to the presentation of individual notions and general notions respectively, may be taken to apply with equal force to judgments or propositions whose subjects are logically singular and

to those whose subjects are logically universal. If the subject is logically singular, the truth of the proposition must be determined by observation or by some other form of independent analysis. The subject must be analyzed, at least sufficiently to enable the learner to subsume it under the predicate at hand. No comparative study of similar individuals will assist in this process; no generalization is involved in it; it does not reach the stage of an inductive act in any sense whatever. On the other hand, if the subject of a proposition is logically universal, the truth of that proposition can be established only through reference to the individuals which are grouped under it. When these individuals have been comparatively studied (after each has itself been sufficiently analyzed for the purpose), we are then in a condition to make our inductive generalization. The number of individual instances needing examination is not now in question. It may require few or many. In mathematics it is often sufficient to use only one problem as a means of establishing the generalization stated in a rule, because the conditions are so exact and the inference so plain; in physics or biology it may be necessary to employ many examples, because of the possible varieties of circumstances that may be thought to be interferences unless they are systematically eliminated, not by being silently rejected, but by being tested.

A comparative illustration will help to add clearness to the thought of sameness in the pedagogical treatment of notions and judgments.

MENTAL MOVEMENTS, ILLUSTRATED IN THE REALM
OF NOTIONS.

(Higher class)

Animal

(Lower class)

Dog

Horse

(Individuals)

Rover,	or	Sport,	or	Jack,	Harry,	or	Frank,	or	Bill.
(Parts) His head, skin, color, body, bones, size, tail, muscles, form, legs, etc.					(Parts) His head, skin, color, body, bones, size, tail, muscles, form, legs, etc.				

MENTAL MOVEMENTS, ILLUSTRATED IN THE REALM OF
JUDGMENTS.

(Higher class)

Cloven-hoofed animals

are herbivorous.

(Lower class)

The sheep is
herbivorous.

The cow is
herbivorous.

(Individuals)

"Dot" eats grass (is herbivorous).

"Beauty" eats grass (is herbivorous).

"Nellie" eats grass (is herbivorous).

In studying this illustration we should remember that there are no fully observable elements above individuals. We cannot make observation of dog, horse, or animal ; we may observe Rover, Sport, Harry, and the others, or we may observe the parts of any of these. We cannot observe that cloven-hoofed animals are herbivorous, nor even that sheep or cows are herbivorous ; we may observe the doings of Dot, Beauty, Nellie, and others, and thus establish the truth of the judgments : — Dot, Beauty, and Nellie are herbivorous. If one were to make the assertion, Cloven-hoofed animals are herbivorous, it

might be met by the inquiry, "How is this known?" It would not suffice to refer to the next lower generalization, and, having asserted that sheep are herbivorous and cows are herbivorous, to rest there. Again would come the inquiry, "How do you know it?" This would require us to fall back one step further to the proposition with a logically singular subject, and here we might rest, for we are now on a basis of solid fact of observation. We can make sufficient analytical examination of Dot, Beauty, Nellie, etc., to note that each of them does eat grass. The only question now involved is, whether or not we have examined with correctness a sufficient number of individual cases to warrant the successive generalizations that we make.

But suppose such a distinction as that made in reference to these four methods is clear, what is it all worth? Much in several ways. In the first place, it will enable us to avoid the confusion of thought which can state the above distinctions in definitions and forthwith confuse them in the illustrations. In the second place, it will prevent the error of thinking that because it is correct to proceed in nature study from the facts of observation to the laws and causes, which are truths above observation, it is therefore correct to proceed in geography from the school grounds, which may be observed, to the township, county, state, country, etc., which are beyond observation. The first of these is a clear case of induction, leading from individuals which may be observed, to truths which are reached by generalization; the second is an equally clear case of synthesis, leading only to a larger, but distant, unit. Such imperfect thinking by

false analogies seems destined to lead to more confirmed errors in practice than are likely to befall one who seems scarcely to think at all upon matters of pedagogy, but who merely acts in the schoolroom as he was acted upon. In the next place, this distinction will aid teachers in determining the nature of the results that may wisely be reached by leading pupils in thought through a long and laborious process of discovery, and, on the other hand, those which should be told without delay. It will save teachers the heartache, occasioned by a fruitless endeavor to make the committing of the multiplication table or a stanza of poetry submit to the same orderly procedure that they find appropriate in the development of a rule in arithmetic or a law in physics. In short, it will enable teachers to see clearly that the mental steps involved in the mastery of a body of truth which is to be comprehended are necessarily very different from the processes undergone in the development of skill, or from those required in impressing any item upon the memory.

We frequently hear stated in support of a synthetic procedure that it is in accord with the so-called "principle" — proceed from the known to the unknown. This educational maxim, however, has no significance except where the known can be discovered, at least in part, in that which is as yet unknown ; and this familiar element then serves as the means of interpreting the unfamiliar. But such conditions do not exist where part is put with part synthetically until a whole, or unit, is formed. They are present, however, in all cases where a generalization has been inductively developed and is then applied to

new individual instances. A knowledge of the names, locations, and characteristics of the rivers, mountains, cities, etc., of Pennsylvania will be of no service whatever in enabling a learner to interpret these same facts concerning the rivers, mountains, and cities of New York or other surrounding states. And yet, this is literally a case of proceeding from what is known to what is as yet unknown. Indeed, it is clear that all learning is such a process—passing from the narrow bounds of the known of to-day into the wider unknown which is to become in part known by next week or next year. But this is a simple truism. Certainly when put into the form of an educational maxim, it is intended to convey some real meaning. On the other hand, a knowledge of the general concepts, river, mountain, city, etc., will enable me to understand when I study about the rivers, mountains, or cities located in any portion of the earth, and I can understand what I study about distant ones just as well as I can what I study about the ones in an adjoining state. So also will a knowledge of the way to multiply a fraction by a fraction be of great service in aiding me to understand how to divide a fraction by a fraction, not because the advance here made is a synthetic one, but because the old truth reappears as an element in the new, and thus enables me the better to interpret the new.

Order of Use of Contrasted Methods.

Since the great body of our study consists in the mastery of that which nature furnishes to the student ; and since nature furnishes to us only individuals, — never

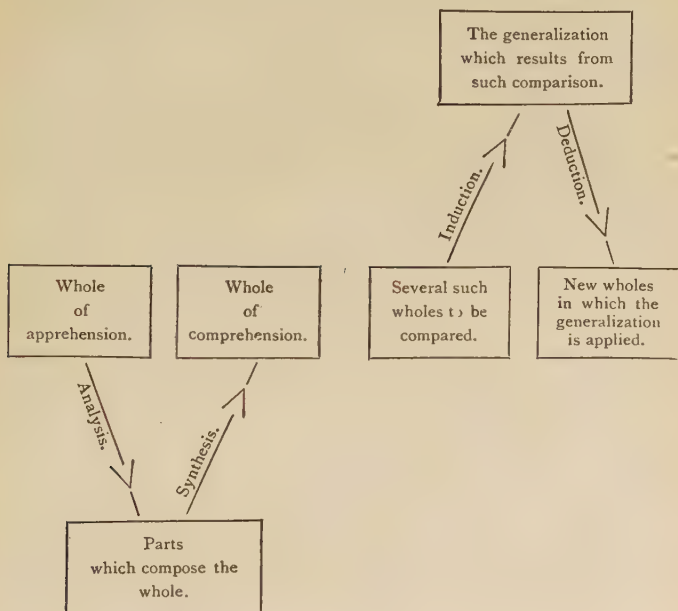
classes, nor dissociated parts, excepting in the midst of decay, — it would seem natural to begin our study with individuals. That this is also the dictate of reason we have on no less authority than that of Sir William Hamilton, who says, in his "Lectures on Metaphysics": "The first procedure of the mind in the elaboration of its knowledge is always analytical. It descends from the whole to its parts, from the vague to the definite." In support of this position it might further be added, that any generalization from particular data is comprehensible only in the light of the data from which it is developed. As giving satisfaction to still other minds, it may be mentioned that dissociated parts, which are parts out of relation to one another, are either totally incomprehensible or, at least, very difficult of comprehension. It would seem to be the dictate of wisdom, therefore, to begin our instruction with that which human reason requires and the natural universe provides. Systems of classification, as well as dissociated fragments, are artificial human products. The point of departure in our teaching, therefore, should be neither dissociated parts to be synthetically grouped into units, nor generalizations in the form of laws, principles, or definitions to be deductively applied. Of course this does not refer to the point of departure in any subject for students of an advanced grade, but to the true point of departure for those beginning the study of a subject.

All our argument, then, seems to point to the conclusion that learning should begin with individuals and should return to individuals. Two courses are therefore open to the learner, and his choice must be determined

by the immediate end which he has in view. If, in his study, his consideration is given to an individual thing without any reference to its classification (or consideration in the light of a general law), the entire procedure for him is an analytic-synthetic one ; if, on the other hand, he is using this individual in connection with others, or as a type of its kind, for the purpose of generalization, the entire procedure for him is an inductive-deductive one.

This is intended to emphasize the thought that, though the individual or whole is the correct point of departure in teaching, the learner should not stop with having performed merely the act of analysis, since this will leave him with a resultant product of dissociated fragments having neither coherency nor usefulness ; this analytic act should be followed by the reconstructive act of synthesis. Having started with a whole or unit of *apprehension*, the pupil will return by an analytic-synthetic process to this same unit, which is now a unit of *comprehension*. If this study of individuals is a comparative one whereby he reaches generalizations, it is again not enough for him to perform merely the process of induction and rest with that ; such a course will leave him in the realm of vague generalizations. In order that these generalizations may be stripped of their vagueness and become practically useful, the learner must continue his thought and must make deductive application of them in new and varied individual instances. This alone can save him from a mere pretense of wisdom, in which much dealing is done in glittering generalities, and give to him the stability and security

of definite fact. The relation of these several operations to each other may be graphically indicated by the following diagram : —



These four operations embrace what are regarded by the advocates of Herbart's pedagogy as the necessary stages of all right method; that is, "(1) the apperception or assimilation of individual notions; (2) the transition from individual to general notions, whether the latter appear as definitions, rules, principles, or moral maxims; and (3) the application of these general truths to new concrete facts — the return from general notions to new individuals."

The process of analysis-synthesis corresponds to the apperception or assimilation of individual notions; induction corresponds to the transition from individual to general notions; and deduction corresponds to the application of the general notions to new individuals.

Though the above order is the one to be observed wherever the conditions exist that will make the application of these several methods possible, it is not to be understood that they are applicable in all subjects. Induction and deduction have no meaning whatever excepting in connection with a body of truth (a body of generalizations) which is to be comprehended. The mere committing to memory of facts, or the acquirement of skill in an art, are cases where induction and deduction have no significance. There must be general notions to develop and to employ, in order to make occasion for the use of induction and deduction. Committing to memory a set of definite facts, as a poem, the multiplication table, or the facts of history, is simply impressing upon a learner's being a fund of individuals. Of course these should when possible be comprehended, but the endeavor to comprehend is a different learning act from that of committing. The acquirement of skill in an art, such as writing, drawing, singing, or gymnastics, affords no opportunity for the employment of induction and deduction. These arts are primarily matters of muscle control, and not mental operations upon truth.

The claim is sometimes made that, though the general must be preceded by the particular, because there is no other way in which the general can be understood, yet

it makes no real difference whether one's actual teaching course is inductive or deductive. To this it may be replied that, though interest may at times be best awakened by hurling at a pupil some bold generalization, yet this is not a safe general procedure and can be advocated only as a temporary device. While it may thus be employed as an expedient for arousing an otherwise sluggish mind, it should be remembered that it is contrary to the rule of rational procedure with minds that are active. A surgeon's knife may with wisdom be applied to a diseased part, but no one would seriously consider making this a just ground for advocating its universal use upon healthy organs. Interest is often best aroused by startling a mind with the unexpected; but rational, systematic thinking is never furthered by such disorders. In all of this it is not forgotten that with advanced pupils a study may wisely begin with generalizations, but they should always be generalizations whose individual elements have been employed in earlier learning, or else they are generalizations thrown out to invite effort at mastery from persons equipped by maturity and information to make such an effort with, at least, a probability of success.

It signifies nothing that many good text-books open their various sections by stating either definitions or laws. The text-book is not necessarily meant to indicate by its arrangement the method that intelligent teachers should employ in its use. More frequently it is only a record of conclusions in the form of generalizations, with an additional part composed of examples to be used in drilling pupils in the employment of these

generalizations. The wisdom of this arrangement for most text-books is seen in the fact that, if they were made inductive so as to indicate the steps to be taken in teaching the truths recorded in them, they would become so bulky as to be both unwieldy and unmarketable.

The objection is sometimes urged that the term, "unit of study," is so vague or meaningless that its use only beclouds any discussion in pedagogy. It is urged that anything may be regarded as a unit ; that it all depends upon the view point ; that what is a unit to the mind of a child may be but a part to the teacher's mind. And so we hear that, if we are considering a grove, the individual trees are but parts ; if we are studying a tree, the several leaves upon it are parts ; if we consider the earth with reference to its geography, it is a whole ; if we consider it with reference to the solar system, it is a part ; if we desire to make it so, we may consider as a whole either a river basin, a continental land-slope, or a rain belt. The full treatment of this subject will be postponed to a later chapter (see page 144). Suffice it to say here, that the matter is not to be regarded from the child's view point, nor from the teacher's view point, nor yet from the point of expediency or arbitrary choice ; it is to be determined in the light of the nature and requirements of the branch of study itself. If the child, at a given stage in his mental development, is not able to appreciate the unit which the subject offers him for consideration, he is not prepared to pursue that branch of study, and it would produce but a stunted mental condition to force him to it prematurely. Finally, if the

distinctions of method as above made are to have any real significance, or any practical worth, the determination of the unit of study for each branch, as a means of fixing the point of departure, is an absolute necessity.

CLASSIFICATION OF SUBJECTS.

Those in which the *dominant aim* is the *understanding* of a body of *truths* (general notions).

Those in which the *dominant aim* is the *impressing* of a set of *facts* (individual notions).

Those in which the *dominant aim* is the *development* of a certain form of *skill* (power of doing).

TRUTHS.

Arithmetic.
Algebra.
Grammar.
Geometry.
Physics.
Botany.
Physiology.
Introductory Geography.
Bookkeeping.
Physical Geography.
Civil Government.
Rhetoric.

FACTS.

History.
Political Geography.
Spelling.
Literature.
The Mechanics of
Reading.

ARTS.

Oral Reading.
Writing.
Drawing.
Vocal Music.
Manual Training.
Gymnastics.
Language Lessons.

Perhaps teachers will not all agree that the subjects as placed in the above outline are all rightly placed. There is doubtless room for some difference of opinion. Yet it is clear that the general plan of classification is a reasonable one, and I think it will presently appear that it has vital pedagogical significance. The word, "fact," employed in the classification may need some explanation. This is a word with varied meanings.

Sometimes it is used, in contrast with theory, to mean what is known by evidence of the senses, and not what is hypothetical. At other times it is used to denote what is true, as opposed to what is untrue. At still other times it is used to denote what is particular, in contrast to what is general. It is in this last sense that it is used in the present discussion. Wherever there is an individual item offered for study and to be impressed upon the memory, we denominate it a fact, in contrast with the generalizations, which can be apprehended only through a process of discursive thought, and which are denominated truths.

As a means of settling any differences of opinion concerning the placing of particular subjects, it may be well to offer the following thoughts:—

1. Most subjects are so varied and complicated in their structure, that they are found to contain parts which should be located under each of the general heads. But in order to escape such a microscopic analysis of subjects as would be required if this were undertaken, we have placed the subject in the group which accords with its predominant character and aim. If a subject has as its chief element a body of generalizations, as in arithmetic, we place it under "Truths," even though it may contain some portions that are pure arts to be acquired or simple facts to be impressed. When this is so in any subject, the intelligent teacher will know it and will plan accordingly for the teaching of the exceptional parts. The unintelligent teacher would not be helped, even should we complicate the scheme by cutting subjects into minute sections. No directions

in teaching can take the place of a knowledge of the subjects to be taught, or of a mastery of the general philosophy which underlies their teaching.

2. A determination of the dominant purpose to be served by any subject of study will do much to settle both its classification in this scheme, and the method by which it should be taught. Do we teach grammar for the purpose of giving to pupils a mastery of the structure of the language? If so, that subject has been rightly placed, and the appeal in our teaching must be made strongly to the child's reason. Or is grammar taught primarily for the purpose of enabling us to speak and write the language correctly? If so, then we are aiming in it at the formation of correct habits in speech and writing, and we should locate grammar under the "Arts." Our method of teaching, then, should be chiefly one of imitation and practice.

With these remarks upon the correctness of the outline, we may dismiss that matter, and take the outline as a working basis for a further discussion of the problems of pedagogy. An attempt has been made throughout this chapter to impress upon the learner, that the general method thus far set forth is applicable only to the subjects which present *a body of truths to be comprehended*. But there is more to the problem of learning than the single item of comprehension. Any subject has been properly learned only when three things have been accomplished, — (1) whatever truth is presented in the subject must be *comprehended* by the student; (2) he must then *fix in mind* what has been comprehended; and (3) he must *prepare to express* what has

thus been fixed in mind. If the subject is one that offers a predominance of truths to be mastered, the tendency on the part of many students and teachers is to emphasize the first of the above steps and to neglect the others. If it is one that presents a set of facts to be committed to memory, the tendency is to emphasize the second step and to neglect the others. In most subjects the third step is neglected entirely in the preparation. It seems to receive attention only when the study is one that requires in its recitation some especial method of delivery, as in declamation or singing. We may express what we have learned in very many different ways, by verbatim reproduction, by reproducing the thought in our language, by using the truth in making something in the domain of mechanics, by using the truth for the preservation of health or the enlargement of comforts, by a changed mode of life, a better appreciation of art, or a more refined criticism of men. In some way what we learn should be revealing itself, and we should soon decide in which of the many possible ways each thing is to find expression, and prepare in our study to give it freest course along that line.

Special Processes in Teaching Facts and Art.

Many plans may be adopted for impressing upon our lives the facts and the arts with which the school deals. The details of these plans will appear in the discussion of the special methods of teaching the various branches, but a few general guides may with profit be given here.

Facts.

1. When we are aiming to commit to memory any items offered us for study, as facts in history, the spelling of words, or gems in literature, we should strive to establish some *rational association* between what we are learning and what we already know.

2. Frequent *thoughtful repetition* should be given, even though rational bases of association can be discovered. When the items do not contain any discoverable relations, the repetitions will need to be all the more frequent, and should always be thoughtful.

3. When the items have become impressed, so that with care they can be reproduced, we should *reproduce them many times*. It is just as necessary to repeat this process of reproduction as it is to repeat the act designed to make the impression. Items thus impressed should generally be reproduced in the way in which they are intended to be used. If it is the spelling of a word, it should generally be reproduced in writing, since it is in writing and not in speaking that we need to use spelling. If it is a poem for recitation, it should frequently be reproduced aloud.

The truth to be especially urged upon teachers in this connection is that no amount of reasoning, or arguing, or thought leading will avail in the effort to impress upon the memory of a person the individual items that need to be remembered. We must not consider the end reached when we have led a child to comprehend even the processes in arithmetic; there are items in it for

the memory, and this must be cared for in a proper learning act, just as faithfully as the earlier act of comprehension. When the subject is one made up almost entirely of facts, rather than generalized truths, the process of impressing these items becomes the chief process, in both the studying and the teaching. The methods of analysis and synthesis may be employed in comprehending the statements of complex facts, as in history, and this increased clearness will do much toward impressing the facts upon the learner; but induction and deduction have no significance whatever in this realm. Repetition, thoughtful attention, interest, and faithful reproduction are the great agencies for impressing facts.

Arts.

1. To master the arts, the one thing needful is that the learner shall *perform the act* in which he is expected to grow skillful. It is true that he should have in mind a definite idea of what is to be done before he undertakes the doing, but the possession of this idea will never produce the desired skill. That will come only as the result of persistent doing, and it will come the more surely and swiftly if the doing is performed thoughtfully. No amount of reasoning will avail here; it is not the thinking that we wish to influence, but rather the habits of bodily activity. Teaching in this domain consists in training the muscles and in habituating them to certain lines of action. The presence of an idea is to be followed by the untrammelled performance of a muscular movement.

2. Since there are right ways and wrong ways of performing all the arts, and since the determination of the right is not a matter that can generally be left to the reason of the learner, it becomes imperative that the teacher should set before him *proper models to be followed*. Some of these may be taken from books, but most of them must be obtained from the habitual activities of the teacher. It is granted that a teacher may develop in pupils more skill in a given art than he himself possesses, but he must be able to show them how properly to set about the performance of the act, and he must know enough of the matter to be able to furnish them with intelligent criticism as they progress. His efficiency as a teacher will also be greatly increased if, by his superior skill, he can lead and stimulate them to more earnest endeavor. The one danger to be guarded against is that of doing for the child what he should always do for himself. It is a mistake to regard an excellent product (a drawing or a composition), which is the outcome of the combined efforts of pupil and teacher, as a sign of excellent teaching.

3. Since the arts are to be acquired through performance on the part of the learner, the *models should seldom be presented to him ready-made*. This is uniformly true until the learner understands how to proceed, because the process, rather than the objective product, is at this stage the thing of chief moment. When a task is set for the child in writing, drawing, gymnastics, etc., it should be set for him in his presence so that he may see how the required act is performed. As he advances in the art, and comes to know much of the rationale of it,

he may be given ready-made lessons to perform, because now he knows as well as the teacher how to proceed, and the only thing he needs is to proceed in that manner often enough and carefully enough to establish within his muscles the requisite skill in execution. A teacher's only service now, aside from the task of stimulating the learner to action, is that of an intelligent critic.

The art subjects and the fact subjects are alike in certain important respects. Generalizations play no important part in them, and, therefore, they are not learned by a process of discursive thought. Learners cannot be led by processes of careful reasoning to master their contents. They are made up of individual, though not discordant, items which are to be impressed upon the life of the learner. Persistent repetition, under proper conditions, is the only means of accomplishing this end.

These two sets of subjects differ from each other in one vital point. Facts are to be impressed upon the *mind* in their integrity as facts. The arts address themselves primarily to the *body*, and physical skill is to be the outcome of their study.

Finally, whenever a fact element or an art element appears in any branch of learning, no matter whether it is the dominant element of the branch or not, it must be treated by the learner as a fact or an art. It cannot be made to submit, in the learning, to the processes applicable to truth in the form of generalizations.

The Concrete and the Abstract in Teaching.

(For a more extended discussion of this subject, see W. H. Payne's "Contributions to the Science of Education," Chapter IV.)

One other distinction in method it seems necessary to make with fullness, even though it has been referred to incidentally many times under other names. One of the favorite maxims of educational theorists is the maxim, "Proceed from the concrete to the abstract." Many times these terms are not defined at all; at other times they are defined negatively; and usually there is no attempt whatever made to explain the mode of the proceeding.

By concrete teaching we mean teaching through the use of objects or other illustrations, combined with language.

By abstract teaching we mean teaching through the use of language alone; and in the main this language expresses generalizations, and not individual notions.

Understanding these terms as they are defined above, and accepting the direction that concrete work should precede abstract work, we still find that there are many pertinent questions left unanswered.

Shall *all* that is concrete in any branch be given before an abstract treatment of the subject is begun? One of the purposes of education is to lift the learner's mind above the realm of pure sense — to "unsense the mind" — and to enable him to reach the realm of science and of pure truth. To accomplish this, objects must be employed as means to the higher end, and not

as ends of study in themselves. The abstract portion of any division of a subject which contains both may, therefore, be taken up just as soon as enough of the concrete has been used to make it intelligible. Further reference to the concrete aspect is unnecessary, unless it is found that the abstract is not sufficiently clear, when a return to the concrete is the most certain means of securing such clearness. It is important, however, not to tarry unnecessarily upon concrete instances, but to leave them and test the child's concepts again and again, until, under varied circumstances, he shows that they are correct. There are enough of what we might call material sciences to give to the child all the sense training he needs. Whenever a subject has an abstract portion, therefore, we should use the concrete only as a means of giving substance to the study. Thus the language will become intelligible through the use of objects. This done, we should aim to make the learner able to get truth through the language. We would not have children read about such things as they should see, hear, touch, etc.; but we would have them become able to extend their knowledge, to supplement their sense activity, by the proper use of books. Besides, there are many subjects, as mathematics, civic relations, etc., which can never be known by him who is confined to sense activity. Their truths are abstractions, and can be apprehended only in thought. The instrument of thinking is language.

Another important item relates to the mode of transition from the purely concrete to the purely abstract in teaching. This should be a *gradual change*, as a growth

or evolution. As soon as a new truth has been presented through the use of objects, we should give the child an opportunity to try pursuing it further without the aid of things. If we find him able to do this, we need not return to objects until we wish to open up another truth. And, even in the introduction of new topics, the child will in time get beyond the need of objects, because his power of employing language is constantly increasing. Endeavoring to give children only concrete work for a period of weeks, and then attempting to turn them at once into an exclusive use of abstract thought, will be to have them entering upon the realm of the abstract as mental cripples, and without support. The only difference between childhood and manhood in regard to these methods is a difference in the predominant element. Both methods should be employed always. From childhood, where the concrete predominates, the child should gradually grow to where the abstract predominates; and this change in his type of thought should be no more sudden than the change in his physical nature. He should not be able to point to any period of time and say, "That is where I quit concrete work and took up the abstract"; but he should be brought to discover himself in the employment of a predominance of abstract thought much as he discovers himself grown to manhood.

The objection is sometimes raised that in breaking down any other habit we will not allow "tapering off," but will recommend as sudden a reversal of conduct as possible and a most persistent continuance in the new way. Of habits in general this is true, but the transi-

tion from the concrete to the abstract, in thinking or teaching, is a transition (growth) from one good to a higher good dependent upon it ; while in changing habits, as generally understood, we are bringing about a change from a bad to a good. Abstract methods of teaching cannot be successfully employed unless they are based upon the results of related concrete work ; good habits can be formed without having been preceded by related bad ones, and, if the bad ones have existed, it is upon their *ruins* that the related good ones must be built up.

When we consider the language employed in teaching, we find that it represents varying degrees of abstractness, and hence of difficulty for learners. A statement may be about a single present thing, and about only one sense quality in it ; it may be about a single but absent thing ; it may be about one thing, but have reference to attributes apprehended only in thought ; it may refer to a class of things ; or it may have reference to an abstract idea.

These different types may be illustrated as follows :—

1. This picture is dark.
2. That picture was dark.
3. This picture is beautiful.
4. Pictures are colored.
5. Pictures are fascinating.
6. True beauty is a quality worthy of cultivation.

It should be remembered that, when a child is able to fully understand and appreciate the first of the above sentences, he may yet be unable to appreciate the last, and that merely because of its abstractness. To prepare him for an intelligent use of sentences like the last is no

easy task, but in no other place can the teacher reveal more of the qualities of the true artist than in this. It will be well for the children if, in this connection, teachers will all observe carefully the advice given by Jean Paul Richter in the Seventh Fragment of his "Levana": — "Always employ a language some years in advance of the child; speak to the one-year-old child as though he were two, and to him as though he were six." It must not be inferred from this that the teacher should use a language so many years in advance of the child as to render it meaningless to him, but that he should by careful study find the plane upon which the child speaks, and then strive to lead him to a higher plane by a judicious advance. Frequent reading and explanation of well-selected literature will do much toward the accomplishment of this important end.

CHAPTER XII.

THE ACTUAL REALITIES OF SCHOOL SUBJECTS.

A TEACHER of considerable prominence, replying to an inquiry, was once heard to remark, "We are not yet studying physiology ; we are studying the human body." In this odd reply there is contained much of sound wisdom. Physiology is regarded as the *science* of the human body ; science is an orderly arrangement of facts about some definite thing, made for the purpose of allowing generalizations ; so physiology is here regarded as an orderly arrangement of facts about the human body. This teacher took the actual human body and made observations upon it ; *afterwards* the facts thus learned were put into order, — made into a science. Much current practice consists in reading books about plants, animals, minerals, the earth, the forces of nature, and man, without bringing pupils into vital touch with the different realities about which these books treat. It is the purpose of this chapter to show the necessity of an appeal to the actual reality of each school subject, for purposes of clearness ; to point out what are the realities of the several branches ; and to show how this appeal may be made.

In the main, language expresses a body of generalizations, and such generalizations are best comprehended through the medium of individual "things" that are embraced in them. Any practice, therefore, which causes

the child to deal with generalizations, and does not first familiarize him with the realities about which the generalizations are formed, is a practice that challenges his efforts without offering him a probability of success, and hence thwarts development, leads to confusion, and ends in discouragement and defeat.

Again, in most of the school subjects language is only the medium of learning, and not the real subject matter about which the student is concerned. Directing the attention from the first to books in such subjects is like striving to build up the system by going through the processes of eating without taking any actual food into the body ; or like aiming to become familiar with the home life and environment of a people by meeting with their representatives abroad. Both must result in failure, and can at best only put on the show of an empty conceit.

Finally, this language, like a map but unlike a good picture, is but an *arbitrary* symbol of the real truth for which it stands. Unless the student has come into touch with the real thing itself that is under study, or with such related realities as will enable him by aid of his constructive imagination to supply the lack of a vital touch with the actual, he will confront the same difficulty in reading a book that a person would, who should undertake to tell the color of an absent stranger's eyes by simply hearing his name announced.

Nothing short of some miraculous prevision will make it possible to accomplish either ; and, since our teaching plans are not to rest for their success upon miraculous intervention, it would seem wise not to rely upon lan-

guage as a means of learning before rendering that language significant.

All this prepares the way for the announcement of the following guides :—

In so far as it is practicable in teaching, the actual reality treated in each branch of study should be brought, at the outset, directly before the mind of the learner.

The product secured through such direct study should be compared with the products secured by the other pupils through a similar method of study.

It must not be forgotten that "actual realities" are not necessarily material things. In some studies they are, while in others the realities are words, actions, or even abstract thoughts. That of which the branch treats is the actual reality of any school branch. The following tabular statement will doubtless serve best to bring this before the mind. In connection with the statement of the actual reality of each of the school subjects named, there will be given a statement of the unit of the subject. This is a matter that needs to be settled before we can determine the point of departure in teaching each of the subjects, and before we can systematically apply the methods discussed in Chapter XI.

SUBJECT.	ACTUAL REALITY.	UNIT OF THE SUBJECT.
Primary Reading.	Word forms as they appear in sentences and selections.	A sentence.
Advanced Reading.	Word forms as they appear in sentences and selections, and also the actual processes of expressive utterance; not definitions about pitch, slides, emphasis, etc.	A selection, or an extract long enough to reveal a state of the author's mind.
Spelling.	Words. (Oral or written.)	A word.

SUBJECT.	ACTUAL REALITY.	UNIT OF THE SUBJECT.
Language Lessons.	The child's spoken and written language; not definitions or material things.	A sentence. (The purpose here is to form proper language habits.)
Grammar.	The child's spoken and written language; not definitions or material things.	A sentence. (The purpose here is <i>the mastery of a thought</i> and its correct expression.)
Literature.	Actual productions of authors; not statements about authors and their works.	An entire selection; not an extract.
Arithmetic.	Numbers and operations with numbers; not figures or material things.	A problem.
Introductory Geography.	Real things in the material world about us.	Single things which are to serve as the basis on which definitions are to be framed.
Systematic Geography.	The earth (surface) and its present inhabitants; not globes, maps, pictures, etc.	The earth; not a limited portion of it.
History.	Actual deeds of men in life, writings, etc.; not book statements <i>about</i> them.	An epoch in human experience.
Physiology.	The human body; not book statements about it.	The body.
Drawing.	Actual productions, and the bodily movements required to make them.	Objects. (The <i>type forms</i> to be learned through these because of the motive worth of objects.)
Writing.	Letter forms, and the bodily movements required to make them.	Letters. (Presented in words because of the motive worth of words.)
Vocal Music.	Tones and tone production; not definitions, rules, etc.	A song. (To be learned first by rote so as to show the worth of the scale.)

Probably in some minds there will arise a question as to the reasonableness of considering the earth as the unit of the subject of systematic geography and the body as the unit of physiology, but only an epoch in human experience as the unit of history. If we are right with respect to geography and physiology, why should we not regard the entire record of man's doings as the unit of history?

If in geography we take a continent or any other portion of the earth as the unit, the one prominent element of systematic geography — location — cannot be known till we push our inquiry up to the limit of the earth. So in physiology, if we take an organ, say the eye, as the unit, we cannot know its functions till we consider the brain, circulation, etc., up to the limit of the entire body. In both of these cases we have at the upper limit (the earth in geography, the body in physiology) *a complete and finished unit*, which is that about which the branch treats. In geography there is but one such unit; in physiology all those in the universe are similar to the one studied.

History, on the other hand, presents no such complete and finished thing. So far as completeness is concerned, history is yet an unmade thing. There is no whole of it which is simply undergoing change, as is true with the earth and with the human body; it is simply being made and will continue to be made as long as mankind lives and acts. For this reason we regard an epoch in human experience as the unit of history, even though it is understood that one epoch cannot be comprehended except in the light of others closely enough related to it to have an appreciable effect upon it.

Primary reading is not so much for the purpose of getting thought and thus learning new truth, as it is for the purpose of furnishing one with the arbitrary instruments whereby thought may be acquired in the future. Just now the child is supposed to have the thought and also the oral means of expressing it; the aim is to provide for him the corresponding written forms of expression, and to make him familiar with those forms. The sentence (not word or letter) is regarded as the unit of the subject, because a sentence is the smallest language element that expresses a complete thought.

The art of expressive utterance of new truths is a matter that should follow the above, and it is the thing aimed at throughout advanced reading. It will thus be seen that primary reading merges imperceptibly into advanced reading, and that between them there is no sharp line of demarkation. When expressive utterance forms one of the chief aims of the work in reading, it is necessary that the element of feeling contained in the selection to be read, and not merely the thought or truth, should be fully considered. Because of this we regard the selection, or a sufficiently long extract, as the unit of the subject of advanced reading, since the feeling cannot be set forth in the isolated sentences of a selection, even if the thought can. The prime aim of reading as a schoolroom art, even in the most advanced grades, is the formation of a habit of proper utterance, not the mastery of a body of doctrine. In so far as a body of doctrine is dealt with at all, it should be simply as a means of furnishing the pupil with that which will render him independent of the teacher's help in the wise exercise of his acquired habit.

In spelling, the chief aim is to impress words either as forms or as sounds ; spelling has nothing to do with word meanings. It is very important that children should learn to know the meanings of the words they spell, but this is no part of the spelling exercise. It simply emphasizes the intimacy of the several school subjects, and impresses the value of rational correlation in teaching. Whenever letters come up for study as they do in spelling, it is well for us to know that there are three things to learn about them, — their names, sounds, and forms, giving rise respectively to what are familiarly called oral, phonic, and written spelling. Words have value merely as the representatives of ideas ; letters are valueless excepting as the pieces which, when properly put together, form words. As language, letters have no significance in themselves, but only as the parts of words. It is because of this that the word, and not the letter, is regarded as the unit of the subject of spelling.

Language lessons are frequently looked upon as being merely elementary grammar with a distinct name. This error has doubtless been a fruitful cause of much mistaken practice in the teaching of elementary language. The purposes of language lessons and formal grammar are as different as are the purposes of any two subjects in the curriculum. And this difference of purpose, as will be readily seen, gives rise to the necessity of treating them in a very different manner.

Language lessons deal with the actual speech and writings of pupils, and not with formal definitions. Such definitions announce the net result of a long and severe process of classification applied to the language itself.

Neither do they have to do with material things, excepting as such things may be used as the occasion of the thinking which will determine speech and writing. So far formal grammar is similar to the language lesson. Again, since the smallest language element that represents a thought is a sentence, and since no expressions divorced from thought constitute a language, we conclude that the sentence is the unit of study for language lessons as well as for formal grammar. But here the resemblance ends. The purpose of language lessons is the formation of correct habits of speech and writing. These habits, like all habits, can be formed only by repeatedly performing the appropriate activities, and not by studying definitions about them. Language lessons, therefore, emphasize the art side of language, and not the science side. To be successful they must mold the language mechanism so that it will be correct in speech and writing without the person's being compelled to think why. This can be accomplished to a very marked degree through imitation and repetition with needed corrections, without the child so much as knowing that there is any reason why. As he advances and begins to learn from his formal grammar the sets of rules of syntax, he will be intelligently fortifying himself in line with the proper habits which by that time have become fixed. Then he will have in his possession the data that will enable him to form new habits or to correct any improper old ones. But the possession of such data will not modify his speech in the least; that can be accomplished only by *applying* such data, or, failing to possess it, by imitating the good example of others.

On the other hand, the purpose of formal grammar is to give one a mastery of the structure of the language. It makes its chief appeal to the thought, not to the power of imitation. It presents, primarily, a body of doctrine to be comprehended, not a set of rules to be applied. It emphasizes the science side of language, not the art side. No blind or even intelligent imitation is of avail here; nor will any formal recitation of uncomprehended definitions or formulas assist. Everything that is to be of service must be grasped by the understanding of the pupil. Classifications are now to be made and generalizations to be formed. These will find their appropriate expression in definitions, rules, and laws. This clearly necessitates the use of actual speech and writing as the reality which grammar treats. Book statements in the form of definitions and laws about the structure of the language can never supply the place of the language itself, which will reveal its structure. A great language system is now to be established and understood; then it is to be committed to memory. The application of these generalizations will give us our formal composition work, which is to supplement the theoretical side of grammar. In such work we return to the method and the aim of the language lesson, only now our practice is guided by an understanding of the structure of the language, whose use is to add to mere accuracy the beauty of an elevated style.

Primarily the language lesson aims at teaching us to speak and write the language correctly, while formal grammar aims at giving us a comprehensive mastery of the rational structure of the language. In the light of

this comprehension of the structure of the language we may, *by sufficient practice* and not as the necessary consequence of our knowledge, fortify and further beautify the speech and writing which have become crystallized into habits.

Much of the current practice in the study of literature consists in learning the names of literary characters, their place of birth and perhaps of death, something of their mode of life, the names of their writings, and finally a few selections taken from their actual works. All of this it is well to know, but most of it is not literature. The actual writings of men constitute the reality of literature. These should be brought to the attention of pupils, their lessons revealed, their beauties disclosed, and upon them should be centered a strong interest. From this may spring the desire to know the men who wrote, and also to know the opinions which others have entertained of their writings. Then is the time to study the author's biography and also the criticisms others have written of his works. When the study of literature is viewed in this light, our next inquiry is for the unit of the study, so that we may determine the mode of procedure in the study of actual writings. Since the truth of an entire production often greatly modifies our interpretation of individual sentences in it; and, since the prevailing sentiment of a selection never can be appreciated by considering its isolated parts, we conclude that the unit of study in literature is the entire selection, and that in teaching it one of the first things to do is to read the entire selection, so that the class may apprehend it

as the definite thing to be analyzed and otherwise studied, until it is comprehended and its treasures appropriated.

In arithmetic many difficulties confront us because much arithmetical language has a double application, and because in arithmetic we have to do with the most difficult abstraction that the primary pupils are compelled to attack. It signifies but little to many minds when they are told that arithmetic is not a science of figures nor of material things, but of numbers. Just how the number idea differs from figures and from things, we shall not discuss in this place. (It will be treated in the chapter on "Arithmetic.") Here it must suffice to say, that when we study arithmetic we are not studying primarily the characters 1, 2, 3, 4, etc., nor are we studying peas, beans, sticks, numeral frames, etc. We are studying numbers, and these things are the visible means by which we do it. As well might one assert that in the process of nourishing the body we eat knives, forks, spoons, dishes, etc., as to assert that in nourishing the arithmetical faculty we study figures and objects. The real thing to be secured in arithmetic is the knowledge of numbers and the operations performed with them; and in doing this we are compelled to resort to visible aids, in order that we may give to the fleeting ideas of the child a kind of permanence by establishing a material representative of them. The danger of substituting in our thought the representative (figure) for the thing represented (number) is increased because of the fact that the representative is a perceivable thing, and is therefore easier, and

because of the fact that it takes the same name as the thing it represents. We speak of three, four, five, etc., meaning the numbers and also meaning the figures.

What now is the unit of this subject whose reality is number? When these number ideas are made explicit to the child through the help of objects, so that he knows what we mean when we speak of two, three, or four, we are prepared to carry on the study of their relations, and to consider the operations of which they are capable. But when conditions are offered which call for the employment of these operations we have problems; hence, we conclude that a problem is the unit of arithmetical study. All that precedes the consideration of the problem — the development of the different number ideas — is merely so much necessary preparation for the study of the science of arithmetic. Arithmetical problems are now to be analyzed; and the results secured by such operation are to be taken as the data from which rules, etc., are to be inductively developed. These rules are in their turn to be deductively applied to the solution of new but similar problem. Now we are positively to *work by rule*, because we have intelligently developed the rule as a means of future economy. The only legitimate objection that can be made to working by rule is the objection to mechanical employment of rules that are not comprehended.

For the sake of intelligent treatment we have divided the subject of geography into two divisions. In the first, called introductory geography, we aim at the development of geographical general notions; in the second, called systematic geography, we aim at mak-

ing the learner familiar with the details of the several parts of that great geographical unit, the earth.

It is evident that the actual realities of which introductory geography treats are the real things in the material world about us, and not definitions. The child should, from the outset, be directed to look about him and observe the hills, mountains, valleys, rivers, cities, clouds, rain, hail, snow, etc., and not be encouraged to think that geography is a subject whose material is to be found within the compass of a certain book. The use of a book becomes an indispensable adjunct to the study of things, because no child's surroundings will furnish him with specimens of all the geographical elements about which he must learn; but the verbal descriptions found in a book become intelligible to the child who has in mind a sufficient amount of suitable data to enable his imagination to work with security. The point at issue is that the child should be immediately impressed with the true idea that geography is about the actual things which surround him, and is not an exercise in language. He should early form the habit of projecting his geographical ideas into real space, and not into a book. Geographical terms must become the signs of actual things, and not be regarded merely as words with verbal definitions attached to them. In this view, the verbal definition becomes the mere summing up of the results of our inductive study of things. It is the *end* aimed at in introductory geography rather than the point of departure in the study. If the actual reality in this division of geography is the body of geographical things about us, then a

single real thing becomes the unit of the subject. This mountain, this river, this island, or this bay is to form the unit of study, and from such study we are to develop the general notion mountain, river, island, or bay. The manner of treating these several things is an all-important matter in this connection. A child may look upon any one of the natural divisions of land or water and withal not know what such a thing is, when asked, or not know another of the same class when he sees it. A Pennsylvania educator was at one time passing along the bank of a river, and from the car window he called his five-year-old son's attention to a beautiful, grass-covered island in midstream, at the same time giving him the name, island. Presently they approached another and the little fellow asked what it was. Upon being told that it was an island, he immediately remarked, "But, papa, where is the grass?" The child's attention had been centered upon that which was to him the most conspicuous feature in the object before him. Just so it is likely to be in every instance, unless those who teach direct the learner's thought and observation to the features that make the thing in question one of a certain class. If it is an island that is the object of study, and the aim is to develop a general notion and formulate a definition, then the size, shape, vegetation, etc., should receive no attention whatever; the whole mental energy should be expended upon those elements which constitute it an island; namely, that it is a portion of land entirely surrounded by water.

In systematic geography the actual reality is the earth. The use of globes, maps, etc., is a real neces-

sity, but it must not be forgotten that these things are only the instruments that are to aid us in comprehending the facts about the real world. Geographical direction is not toward the top, bottom, or sides of a map; it is the line or course *upon the earth* in which anything is lying or pointing. These courses, which are upon the earth, must be represented upon the maps, and the usual plan is to represent the north upon a line extending toward the top of the page, the south upon a line extending toward the bottom of the page, etc., though this is not an invariable rule. This view respecting the actual reality in systematic geography will doubtless be readily conceded; the position to be taken with reference to the unit of study may require more careful thought.

Having developed, in the introductory stage, the geographical general concepts—the definitions of geographical terms—we are now ready to proceed with a detailed consideration of the geographical unit, the earth, in the construction of which there is a certain definite number of countries, oceans, states, cities, rivers, islands, etc., each one having its fixed location, its exact size, its utility, and many other distinguishing features. Now none of these can become to the children objects of personal, finished observation. The river, the township, or the city can be seen by the child only in part, and must, therefore, be studied through its representative on the map. The difficulty of comprehending, in his childish way, an entire state through its map is not more formidable than the difficulty of comprehending a single township through its map. On the

same principle, the child may be expected to get a just, though vague, notion of the earth in its entirety through the help of a globe. Of course we must expect the child to know proportionately less of the details of a state than of his home township, less of the country than of his home state. But this is true simply because there are more of them to be known, and because they present greater variety and more of newness. Time and extended effort will correct this matter, and it must be corrected for most of us in the same manner for our home state as it is for the most distant country; namely, through the study of representatives, such as maps, globes, verbal descriptions, specimens of products, etc. The important thing for teachers to keep in mind, therefore, is the fact that they must constantly remind the learner that these maps and globes stand for real things *such as* he can look about him and see, and that these realities are located at certain definite places upon the earth. This being true, the claim that we should begin systematic geography with the near and proceed synthetically to the more remote, because then we can employ observation at the outset, seems to be without force. That observation should be at the foundation of our study of geography is certain, but its purpose is to acquaint us with the nature of things so that we may thereby develop correct geographical general concepts — know just what an island is and a river, a mountain, or a city. It is not intended that we must employ observation as the only means of learning all the details about our home county any more than it is that we must use it to learn the details of Cuba, the Susquehanna River, the

Rocky Mountains, or London. Indeed, at this point observation need not play any immediate part and we may still become very well informed.

Having met the mistaken claim that personal observation is the means of learning the facts of systematic geography, we are prepared to make the claim that, since systematic geography treats of the present facts of this earth, and since this earth is one and not a class, it is, therefore, the unit of the subject and consequently the point of departure in the study of it. The first thing, then, to do in opening the subject of systematic geography is to teach the child, through the help of a globe, what the earth is like, the disposition of land and water upon the earth, of countries, states, etc., in order to enable him to know just what part is meant when he studies all the minor details concerning his home county. For the consideration of details he should begin with his own district, but it should be *after* he has taken a running survey of the unit in order to get his bearings. This is making a rational application of the guide announced by Hamilton, Spencer, and others, "Proceed from the vague to the definite," because it gives the learner a real and comprehensible end to aim at and make definite; while the synthetic procedure, if employed consistently from the start, does not enable him to fix an end, but requires him to pass on blindly into an ever-widening field, and to consider his task as finished when at its consummation the teacher announces the end.

Another argument for beginning with the unit and proceeding analytically to its parts in geography (as we

should in all else where individuals are under consideration) is based upon the fact of location. Every attempt to give geographical location to places is made in terms of the next larger division ; that is, a township or town is located in a county ; a county, in a state ; a state, in a country, etc. All this assumes an elementary knowledge of the larger divisions first. To endeavor to get on without attention to the element of location would be to omit attention to one of the fundamental elements of systematic geography.

It seems useless to argue upon this point, as some do, that whatever we select — a river basin, a land slope, etc. — may be made the unit of geography. Such a matter is not determined by caprice nor by any act of arbitrary choice. Unquestionably one might begin his instruction in geography at any point he chose, and he might call that the unit of his study ; but such arbitrary choosing would not render the act reasonable. The unit of any subject must be determined by the nature of the subject itself, and not by our wish in the matter. Botany is a science of plants, and hence a plant, not a leaf nor a forest, is the unit of the subject of botany. So geography is the description of the earth ; hence the earth, and neither a state nor the universe, is the unit of the subject.

History presents many difficulties to the student of pedagogy ; first, because of the widely different natures of what we may call the facts of history and the philosophy of history ; and second, because of the fact that the subject of it — man as he appears in the organized unit called society, and not man in isolation — seems to

be a great and growing thing into which an individual comes, and from which he departs without disturbing its steady growth. Many subjects present to us definite units, which, though they may undergo change, can still be viewed in their entirety. But history presents no entirety. Instead of being a definite thing which may be held in its integrity even while we are viewing the changes of growth or decay, it is rather an unmade thing which is only in process of becoming. But of one thing we are sure; namely, that the deeds of men in actual society constitute the reality of history. The language of a book, even though it may have the word history printed upon it, does not constitute the vital matter in this study. Children must be taught to look beyond this language and to realize that it stands for just such human experiences as they may see enacted about them daily. Attention should, therefore, be called to the doings of men in the present, either as they may be witnessed in fact or as they are recorded in the daily press, so that these may serve to make significant the records of events that are remote both in time and place. It is very evident that the facts of history must be accumulated by the learner before he is prepared for rational work in the philosophy of history. This accumulation of facts consists chiefly in impressing them upon the learner's memory. Of course they should be comprehended as facts before they are committed to memory, but, being merely facts and plainly stated, their comprehension should be a simple matter. The drill requisite for impressing them indelibly upon the mind is now the important thing. Every legitimate

attraction that may be added to this process of drilling is in order, but it must be understood that such attraction cannot supersede the drill; it merely renders it more effectual. When thought is taxed to determine the relation of historic events to each other as cause and effect, to form historic generalizations and opinions of men and measures, we are engaged upon the philosophy of history. Now drill to impress facts is no longer the chief concern; it is rather an appeal to the understanding, and a great field for comparative study has been opened up. It is not meant that these two processes should be kept distinct in time. They are rather aids to each other. But it is meant that facts must be at hand before one may safely speculate upon them. It is further meant that in securing the fact, prime reliance must be placed upon the drill; while in discussing cause and effect, men and measures, the chief appeal must be made to the judgment. The two processes should develop together and act as supports to each other.

It would be an easy matter to determine the unit of historical study if the subject were merely a record of the deeds of isolated men. Each act worthy of record would then constitute a unit of history. But in society, which is the power that makes history, each man is so inseparably bound up with other men, and each act is so affected by the supporting and disturbing acts of others, that it is impossible to regard any one individual as the sole cause of a great event. It is equally impossible to regard any one act as the cause either of the failure or the accomplishment of any undertaking. Furthermore,

it is not possible to point to any one act as the closing act of a great social drama, excepting as we may arbitrarily choose to call it closed and to turn our thought to other events invested with superior interest, because each section of human experience thus spoken of as a drama enacted leaves its effects in future events both near and remote, until it becomes impossible to speak of any event as having ceased to extend itself through its consequences. Accordingly we select an epoch in human experiences as the unit of historic study. By an historic epoch is meant a period in the progress of events whose occurrences bear so intimate a relation to one another that we are justified in regarding them as merely the several parts of one prolonged enterprise; as the period of colonization, or the Civil War, which may be regarded as epochs in American history.

Concerning the actual reality and the unit of study in physiology, as in all nature study, little needs to be said, because their structure is so evident that it leaves but scant room for any differences of opinion or any liability to error on the part of those who think. Human physiology has as its reality the human body; botany has plants; mineralogy has mineral substances; ornithology has birds, etc. Any attempt to substitute book definitions or verbal descriptions for these realities is a violation of the reality principle in education, and must lead to superficial attainment, if it escapes positive error. Of course, it is to be understood that personal observation will be supplemented and greatly aided by a careful study of the literature of the science, but the purpose here is to warn against the too common practice

of seeming to study certain branches of the natural sciences by merely reading books about the things in question. We are not doing rational study of physiology if our efforts in that direction are exhausted when we commit questions and answers from even a physiology text-book.

As the human body is the actual reality in physiology, so is a human body, and not a trunk or head or limb, the unit of study. When we remember that a whole, like the human body, a plant, or a bird, is simply *the several parts in their proper relations to each other*, we are in a position to realize the wisdom of opening our study with a view of the unit in its entirety. The relations of these several parts to each other cannot be understood except as the parts are presented to the learner in their relations; their functions cannot be appreciated unless their several relations are known. And when these two things are eliminated from the study of nature all the vital elements are gone — there is little else to do but give the names of things and recite high-sounding but meaningless phrases about them.

Drawing as presented in the public schools may have several different purposes to fulfill; but whatever these are, it seems certain that they are to be accomplished largely through bodily movements which are employed in the actual production of forms. In this effort the learner must be trained to observe, but it is only in order that he may then *make*; he must be taught to appreciate and enjoy, but this is only the outcome of his wisely directed effort to make. This labor of his

may produce good products but be awkwardly performed. Hence we see that there are two distinct things which constitute the reality with which the teacher of drawing has to do, — the actual productions of the child and the bodily movements required to produce them. Errors may arise either by getting a faulty product or by getting it in a faulty manner. No discussion of the way in which things should be done, no study of the names and peculiarities of geometric forms, can take the place here of the actual deeds of the learner. The problem before the teacher of drawing is the development of the learner's skill in manual art. It is true that we do not aim in the public schools to make artists ; but it is also true that in the drawing class we do aim at making children able to draw. If appreciation of the beauties of nature and the culture of the artistic sense were the only things desired, they could both be secured by other and better means than those used in the drawing class. In the drawing class it is the ability to execute intelligently that is our chief aim ; all other things are incidental to this, though they may be important in themselves. Concerning the employment of the objects to be drawn, two opposing theories have been held. One is that the exact geometric forms should be regarded as the unit of study ; the other is that natural objects which embody these type forms should be taken as the unit of study. Several arguments can be advanced for accepting the second position. Geometric type forms are purely artificial. They are the products of a long and laborious period of development in human thought. They contain but little significance to the learner, ex-

cepting the student of geometry, and possess no power to attract. On the other hand, objects in nature are things with which he comes into daily contact, and upon which his interest is already centered. To draw these will give to the art immediate attractiveness. Hence, we conclude that because of their greater motive worth the objects in nature, rather than the geometric type forms, should be taken as the unit of study in drawing. This means that drawing should not be begun by endeavoring to make straight lines, curved lines, triangles, squares, etc., as a preparation for drawing objects; but that at the outset the learner should be urged to represent an object, and as the outgrowth of such intelligent and attractive effort he will acquire the skill to make straight and curved lines as well as all combinations of both. This method of procedure robs the drawing class of its mechanical drudgery, and lends interest to an intelligible activity from the outset, without lessening any of the good results in the line of increased manual dexterity.

In the writing class, as in the drawing class, we aim, primarily, to secure skill in an art, and not to comprehend and commit definitions and rules. The actual realities, therefore, are the letter forms and the bodily movements required to make them. The learner's attention needs to be called to the correct forms of the various letters, and he needs to have his own incorrect copies of them carefully criticised. His bodily position, manner of holding the pen or pencil, movements of arm, etc., constitute the other elements needing a teacher's care.

The unit of study in writing is plainly the letter. But it is expedient that the letters should be presented in words, because connected with the words there is meaning, and thus from the outset the purpose in learning to make letters is revealed. Nothing can take the place of continued drill in learning to write, but if the purpose of writing is thus disclosed it will relieve the process of much of its drudgery. A distinct aim thus presented to a learner awakens interest in his tasks and affords the best opportunity for intelligent effort.

Having examined in detail the actual reality and the unit of study of a sufficiently large number of common school branches to enable the teacher to understand the principle involved, we now turn our attention to some of the problems involved in the discussion.

The charge is often made that the Humanists violated this principle, because they gave attention so exclusively to language, grammar, rhetoric, etc. Regarding the study of classical antiquity as the basis of all culture, it is true that they neglected the natural sciences and therefore did not study "things" in the popular sense of that term. But the fact that they fostered the study of language in all its phases, rather than the study of material sciences, is no proof that they ignored the actual reality in education. If they studied languages through definitions and rules rather than through the languages themselves, then they violated the above guide; but if they took language itself as a means of learning language, and made definitions and laws of the language an outcome rather than a point of departure, they did not violate any of the above truth, even though they

disregarded the study of material things. Their curriculum was obviously one-sided and incomplete, but it may have been correct as far as it went.

Much of worth was added to the learning of the world when the Realists appeared, and, without dropping the attention given by the Humanists to words, added the study of material things also. These men ushered in the era of modern scientific research, but even with this, teachers frequently ignore the actual reality of the branch in question, and overwhelm the learner with a mass of words and definitions which render the work hopeless when given at the beginning, but round it out into beautiful symmetry when given in their proper places.

But one other advance in the history of education should be noted in order to understand the growth of this movement. The Humanists and the Realists differed essentially in the subject matter of their teaching, rather than in the manner of teaching it. The third school of educational thinkers — the Naturalists — differed from the other two in their emphasis of the importance of proper methods of teaching. They gave pointed discussion to the thought of obedience to the requirements of man's nature in the teaching act. Things of all kinds, material and immaterial, were to be taught, but this was to be done in the right order and manner. Thus far we have determined the true order and manner only in part, but we at least know the way to a solution. Complete knowledge on these points will be secured only when we understand fully the nature of the mind that is being educated, and the nature of

the entire round of truths by which this education is afforded.

Sometimes it is impracticable for the teacher to bring the actual reality of a branch of study directly before the mind of the learner. In that case there are several substitutes, some of which we are forced to use, but we shall not fail to keep in mind that they are substitutes, and are justifiable only on the ground of necessity. They are models, pictures, and verbal representatives. The exact order in which these should be resorted to it may not be possible to determine, as this is doubtless dependent upon many and varied circumstances. The model, it is clear, presents all the dimensions of the reality and would seem to bear the closest resemblance to it; but if the reality is large and specially dependent upon its surroundings for its meaning, as in geography, the model is impracticable, and a good picture is often clearer than any model yet devised. Again, if the reality is a state of mind or a truth, and not a material thing, both model and picture may be misleading, and a verbal description may be the very best aid a teacher can employ. But, if it is not possible to solve the problem of the relative worth of these substitutes, it is still an easy matter to give some statements concerning them, which may be studied with profit. True concepts are not to be secured from that which a child has molded, but rather through the efforts to mold from a pattern. A child cannot make in clay a form that should be taken as an example of his notion of a cube or a sphere. His product will have unequal sides, irregular edges, and imperfect angles; a

cube has none of these. His effort at making requires him to look with increasing care at the pattern presented to him, and this pattern may be taken as a perfect cube only because none of its defects are great enough to enable the eye to detect them. This is true of the representatives of all the exact concepts. Clearly, then, the model offered can be regarded only as an aid to the child in securing a true notion, and the product which he makes must be looked upon merely as an attempt to embody that notion. Nor is this confined to the exact mathematical concepts. A child cannot learn a type of birds, a geographical form, or a mechanical invention from that which he makes in clay or wood ; his modeling is valuable chiefly as a means of requiring him to look and to think with greater care upon that which he is attempting to represent.

Again, we must not forget that the things which children call pictures vary so much in their nature that they are not equally serviceable and easy to use as teaching aids. A true picture, as we understand it, differs vitally from a map. The former by its likeness brings vividly to mind that which it represents ; the latter is made up of arbitrary signs whose meanings must be clearly taught. Although children often get mistaken notions of things when they are limited to pictures in their study, yet from the nursery picture books they have sometimes gone out into the fields to recognize cows and other animals at their first appearance ; no child could ever, upon the most careful study of a map, recognize the state over which he might be traveling.

Finally, language, being symbolical, is difficult to inter-

pret, and this is especially true for children if the language is figurative. This should impress teachers with the importance of clearness and exactness in speech. Children are strikingly literal in their use of terms. We may speak with perfect security to developed minds about a "breathing spell," but such expressions are meaningless to the child until his contact with people has made him familiar with such forced usage. One other reason why language is especially difficult as a medium of learning is, that through it we frequently express only the results of study, and these appear in the forms of generalizations. In this connection we shall do well to remember the words of Herbert Spencer: "To give the net product of inquiry, and not the processes by which that product was arrived at, is inefficient and enervating."

The guide announced above, which is the burden of this chapter, contains a second part. To this we will now address ourselves.

Scientists have learned to recognize that individual sense perception is imperfect. Because of this, account is taken of the "personal equation" in the effort to average the findings of different investigators who are engaged upon the same problem. It is well for teachers to learn this same truth. Different persons have different sense defects, and only by comparing the results of their labors can they aid each other and learn to make allowance for their personal defects. But even when there are no clearly marked defects among learners, there will still be differing powers of perception, which are the results of the varying casts of mind, or funds of acquired knowledge. It is well to remember that each person is

all that his past has made him. If he has constantly exercised his reasoning capacity to the neglect of his observation or his verbal memory, he has thereby made of himself a type of mind that is in bondage to its limitations. This is equally true if the emphasis has been placed upon any of the other faculties of the mind. So it is with the person who has confined his efforts to a very circumscribed field of learning. He can summon for use many valuable concepts within this field; but compared with the possible scope of human endeavor, he is very narrow. This coöperative process makes the special finding of each the common possession of all.

Again, this comparison of products requires the pupil to give expression to what he has learned. This act not only fixes better what has been learned, but it gives greater clearness and exactness to the learning; and, as it is usually done by means of language, it affords an excellent means of growth in that important side of the child's education. It is worthy of remark here that in such a process of learning the teacher should reserve his own judgment till that of the children has been fairly and fully exercised. The recitation is designed for the good of the child, and this can be secured only in proportion to his personal effort. What the child can accomplish for himself within a reasonable time under existing conditions should not be done for him. If it is, he is robbed of one of the greatest benefits that might come to him from a wisely managed school, and deprived of one of the greatest sources of pleasure.

PART III.

APPLIED METHODOLOGY.

CHAPTER XIII.

READING.

IN teaching reading two distinct things claim our attention. First, we must develop the child's capacity to interpret the forms upon the written or printed page; second, we must increase his power of expressive utterance.

The first of these, taken in its completeness, constitutes what is familiarly called silent reading, or thought-getting. In it there is much to be done that cannot be addressed to the child's power of comprehension, but must be arbitrarily impressed upon his memory. He possesses the ideas and is able to give *oral* expression to them; we get from him this expression, and then in return give to him a written expression for the same thoughts. Since this is neither thought-getting nor thought-giving, many writers prefer to call it simply word study, which is preparatory to reading, but not reading. But such word study is so inseparably connected with what constitutes reading proper, and, indeed, forms so large a part of what must be done in the primary reading class, that we prefer to include it in the general discussion of

reading. In the early part of this work the truth expressed by the sentences used should be worthy of the child's attention, but it is not to be made the especial object of his study; he will generally know it, and the recognition of the sentences themselves is now vital. Added to this recognition must come the ability to interpret new sentences without the aid of a teacher. When these two things have been accomplished, we have done that which forms the distinctive mission of primary reading. Having given to the child this power of independent interpretation, we have accomplished all that the reading class, as a distinct class, has to do for him in the matter of thought-getting. Now all the branches studied must contribute their share toward the development of the learner's capacity to appreciate and appropriate truth. So long as he continues to live and to learn from books, he will continue the practice of thought-getting.

The second thing to claim our attention is oral reading, or thought-giving. In this there is nothing to be done that cannot be best done under normal conditions by impressing upon the child the thought and sentiment to be expressed. If the instrument of oral expression, the body, is in any respect defective, such defect can be corrected by purely mechanical processes. Faulty breathing, an habitual nasal tone, stammering, faulty articulation, etc., may all be improved by suitable drill exercises. But pitch, inflection, force, time, quality, etc., can all be made right by addressing to the child's intelligence the thoughts to be expressed. They can be taught rationally only by such an appeal to his understanding. In this

thought-giving stage of our work in reading, the child usually comes to the printed page to get the thoughts of others, in order that he may have suitable thoughts to give. As the development of the power to interpret the printed page forms the chief mission in primary reading, so the development of the power to control and use the instrument of oral expression forms the chief mission in advanced reading. From this it is clearly seen that both thought-getting and thought-giving are present in all grades of reading. In primary reading thought-getting predominates, and the feature that is peculiar to primary reading is the impressing of such arbitrary forms as will make the child able to pronounce all words that will be met in his subsequent reading. In advanced reading, thought-giving predominates, and the feature that is peculiar to advanced reading is the development of such skill in the use of the vocal mechanism as will render the child an expressive reader for all time. Between these grades of the work no sharp line of demarcation can ever be discovered. Most of what appears in the process of reading is present throughout the course, but in thought-getting and thought-giving ever increasing ability is to be demanded, as we advance up the grades.

Primary Reading.

Having pointed out that the chief mission in primary reading is to give the child a mastery of the instruments for thought-getting, it will be profitable for us to review the methods that have been devised for the accomplishment of this end.

All the methods of teaching primary reading that have been developed are reducible to three general classes, — the alphabetic, the phonic, and the word or the sentence methods. But, whatever method we use in teaching reading, the same things must be taught. When the work is completed children must know the letter forms, the letter sounds, and the correct method of combining forms and sounds. They should also know the letter names, and be able to give them in alphabetical order. This last is because of the very great need we have of them in reference work and in the construction of outlines, etc. The difference in the above methods is a difference in the order in which the various elements are taught. The method gets its name from the element with which the work is begun.

The Alphabetic Method. This method consists in first teaching children the names and the forms of all the letters of the alphabet. When this has been done, or as soon as a sufficient number of letters are known to make it possible, words are presented and the learner names the letters in each word; from this act of oral spelling he is supposed to be able to pronounce the word. The method is based upon the assumption that English spoken words are formed by combining the names of the letters in the words. This assumption is absolutely baseless. Spoken words are made by combining the letter sounds, and these sounds usually form no part of the subject matter to be definitely learned, according to the alphabetic method. If any evidence is needed to prove that English spoken words are not made up of the letter names, it will suffice to notice the following words pro-

duced by combining the *names* of the characters in them : kt, b4, b9, 4t6, nme, leg, xln, at7, dk, b4t, I c a b. Produced according to the requirements of proper English, by combining letter sounds, they are as follows : Katie, before, benign, forty-six, enemy, elegy, excellency, eighty-seven, decay, before tea, I see a bee.

The claim is often made that in the days of our forefathers the alphabetic method was the only method known for teaching reading ; and since men learned to read then about as well as now, the method must, therefore, be a fairly good one. In reply to this claim it may be asserted that, by the alphabetic method pure and simple, no person ever yet learned to read. Whenever it was thought that this method was being used, teachers were in reality resorting to devices which could have no place in a consistent alphabetic method. The teacher pointed to a word, say *horse* ; and the child named the letters, h-o-r-s-e, but then of course hesitated and could not name the word. The teacher would call for the letters again and again ; each time the child would name the letters, and each time he would fail to learn the word from them. At last the teacher would say, "h-o-r-s-e, *horse*," and then the child would say triumphantly, "h-o-r-s-e, *horse*." With this the teacher would commend him for his improvement in reading, and immediately present another word to have him name its letters, at which he would hesitate until the name of the word was given him. Again the word would be named by the teacher, but not until he had first named the letters which compose it. As well might he have said "a-very-fine-big-black horse," as to have said "h-o-r-s-e, horse." The truth is, the word

is simply, *horse*, nothing more and nothing less. By persistent continuance in such work the child was led to believe that he was pursuing a rational means of learning how to pronounce words independently. In fact, he did come to know something of the *sound* values of the letters by seeing them again and again in words that were pronounced for him ; but this result was not attained by virtue of the teaching, but rather in defiance of it.

What was called the alphabetic method was simply the word method with a large amount of worse than useless matter attached to it. Because the letter names, which were so carefully given, render no assistance in the pronunciation of the word, they become a positive interference to the learner because they distract his attention from the thing he is endeavoring to learn, that is, the form of the word and its name. These are the things he wishes to know whenever they reappear. If we should present a stranger to a child, and, after the child had become impressed with his appearance, give his name (Henry Allen), we would never attempt to impress his appearance and his name upon the child's memory by giving the names of his various parts (head, trunk, arm, leg, neck, foot, etc.) ; much less would we ever think of giving the names of such parts as the means of enabling the child to know what his name must be. To do so, however, would be just as rational, and would be likely to succeed just as well, as to expect a child to pronounce English words from his knowledge of letter names.

The Phonic Method. In this method we begin by teaching the elementary sounds of the language and the

letter forms which represent them. At the outset no attention is given to the letter names; when the forms are presented they are indicated, not by giving their names, but by giving their sounds. In time the child will be given the names of the letters and be asked to commit them to memory in alphabetical order; but in the beginning every effort is made to associate the sound with the form, so that whenever the form appears, its sound value will come to the child's mind, and he will thus be enabled to pronounce the words presented.

Though this work in phonics is necessary for the production of independent readers, and though the phonic method is a great step in advance of the time-honored alphabetic method, there are several reasons why the method which *begins* with the presentation of elementary sounds is not a rational one.

1. It places upon the learner at the outset a large amount of meaningless drudgery for which he can see no use, and from which all rational interest has been taken. Whether we resort to the devices of the older phonetic and phonic methods, or to those of the later synthetic methods, the conditions are all the same. If reading is a process of thought-getting and thought-giving, then any mechanical elements in learning it should have their need revealed by reference to the thought which we attempt to represent. Granted that the child has an idea and gives to it oral expression; he then sees some reason for the character which we put upon the board and call a word; he also attaches a meaning to the character, and immediately his study of it is made reasonable. When several words are pro-

nounced and he discovers their similarities, he realizes the nature and worth of elementary sounds. Likewise, when several words are written and he discovers their similarities, he realizes the nature and worth of written letters. With these matters known to him, the study of elementary sounds and the forms which represent them is no longer a meaningless process. The work at once possesses interest, and the use to which it is all to be put becomes manifest. Thus the child is treated as an intelligent being even in the study of the most mechanical parts of primary reading.

2. It places at the service of the child, before he knows how to use it, an instrument which, under the conditions, will defeat the very purpose for which reading is taught. Anything that does not impress upon the child from the beginning the *habit of thought-getting and thought-giving* in reading is a dangerous thing to put into his possession. If a child is made to believe that pronouncing words is reading, he is being deceived, and this is especially harmful if it is the first impression gained from the work in reading. At the outset, then, and throughout the entire course, we should aim to avoid everything that will tend to divorce thought from word, or that will give to the child a mastery of words *before* he has the habit of inquiring into their meanings. Only by beginning with meanings (ideas) and working from them to words and then down to their elements can we have any assurance that the association of word and meaning will be held while we are studying the elements of words. Let it ever be remembered that language is that of which meaning and word are

but two phases, and that, if we study characters devoid of meaning, we are not gaining a mastery of language.

3. It is unpsychological, and therefore not in accord with the true order of procedure in learning. In its comprehension of things the mind naturally works from aggregates to their elements, and the subject of reading offers no grounds for the violation of this order. By the phonic methods unrelated sounds are to be learned, and then, from these discordant elements, the child is to construct, by a synthetic act, the words which he is studying. Since expression devoid of meaning does not constitute language, and since it is language that we are to treat in reading, it seems reasonable to conclude that the elaborately analyzed elements of words, with which no meaning is ever attached in their separateness, do not constitute a reasonable point of departure in the study of reading. The smallest language element that has meaning associated with it is a word; hence to begin our study of language with anything less than a word is to begin it with dissociated fragments, rather than with consistent units.

Many argue that because the first language of a little child is a language of sounds and not words, therefore the sound is the thing to begin with, since our teaching should follow the natural order of development of the being that we aim to educate. In reply to this it may be said: (1) There is no evidence that the earliest sounds uttered by a little child are anything more than impulsive utterances and simple exercises of his vocal muscles, though we treat them as a clearly developed language. (2) Even if it is true that sounds are the first language

elements used in babyhood, we have in that no sufficient reason for treating a six-year-old child as we would treat an infant in arms. We are aiming to teach reading, not to teach an individual how to talk. The child already knows how to do that. That our teaching should follow the natural order of human development is undoubtedly true ; but it seems equally evident that what this means is, that we should first bring the learner into contact with the rational unities of the subject studied, and from these we should make our analysis in order to comprehend the units, and our generalizations, whenever they are possible, in order to become masters of the truths which the subject may present.

The Word or the Sentence Method. The word method of teaching reading and the sentence method of teaching reading are usually treated as two distinct methods, but we have united them into one, in the present analysis, because they agree in starting with a language element large enough to represent meaning. Neither letters nor sounds have any meaning attached to them ; both words and sentences have. Many reasons for advocating either the word method or the sentence method are implied in the discussion given above. To emphasize these thoughts they might be definitely stated as follows :—

Since reading has to do with meaning and its expression, and since words and sentences (not letters and sounds) are the language elements which have meaning attached to them, they are the elements of expression which form the realities of reading, and should, therefore, form the point of departure in the teaching of reading. If there is any wisdom in bringing the actual

reality of a subject to the mind of a learner, there seems to be as much wisdom in bringing it to him in its integrity, rather than in discordant fragments.

Many object to these methods of teaching reading on the ground that, failing to give the child the phonic elements of words, they are incomplete and render him dependent upon a teacher, and do not make it possible for him to interpret new sentences, unaided. This objection arises from a mistaken conception of the word or the sentence method. The mistake lies in substituting a part for the whole. The objector assumes that we exhaust the word method when we have given the child words as wholes ; naturally he concludes from this that we leave the child in a mentally crippled condition, unless we proceed to supply the deficiency by employing the phonic method.

Now the phonic method is not peculiar in that it teaches word sounds, but in that it is a method of teaching reading *which presents sounds first* and the other necessary elements later. By the word method we teach word sounds also, but as a later development, following the presentation of significant words as wholes, out of the analysis of which the meaning and use of phonics is revealed before we undertake their detailed study. Even at the expense of weariness, let me repeat that, whatever method of teaching reading we adopt, *we must teach the same set of things*. The difference in the methods is due to the different orders in which these parts are presented, each method taking its name from the name of the part that is presented first.

Concerning the superiority of the word method or the

sentence method, there is still some debate. The advocates of each of these methods argue consistently, but they start from different premises.

Those who advocate the word method do so because they regard the word as the unit of study in reading. Their argument is as follows :—

The language elements which the child first uses to express his thoughts are words.

In teaching reading we should begin with the language elements with which the child begins his expression of thought.

Therefore, in teaching reading we should begin with words.

Those who advocate the sentence method do so because they regard the sentence as the unit of study in reading. Their argument is as follows :—

The smallest language element that expresses a complete thought is a sentence.

In teaching reading (which is thought-getting and thought-giving) we should begin with the language unit which expresses a complete thought.

Therefore, in teaching reading we should begin with the sentence.

Now it is evident that these two parties agree in the opinion that reading should be taught by beginning with the unit of the study, and proceeding by an analytic process to its elements. Because of their different points of view, they differ in their opinion of what constitutes the unit of the subject of reading. The word advocates start from their study of the child, and declare that we should look to the practices of the child for the purpose of

determining the unit of the language for children. They forget, as do some advocates of the phonic method, that, when we approach the child to teach him to read, he has passed beyond his babyhood, and that the language he now uses is, in comparison with that of his infancy, quite highly developed. The sentence advocates start from their study of the subject that is to be taught, and declare that we should determine the natural unit of the subject, and then take that as our point of departure. This seems to me to be the more rational view, and to emphasize the thought that, if at any time in life a child is not mature enough to appreciate the unit of any branch of learning, he is not then old enough to begin the study of that branch with profit. Of course this is not the case with a six-year-old child and the unit of reading. He can appreciate sentences, for he has been using them for some time in his oral language.

Happily these two methods agree in emphasizing one vital matter in reading, namely, making the language elements *which have meaning associated with them* the units of study, and therefore the starting point in teaching. In this respect they both stand opposed to all synthetic methods, which begin with fragments and endeavor to construct from them consistent units. Furthermore, the items in which these two methods differ from each other are so unimportant that, while I do not hesitate to declare that the greater merit attaches to the sentence method, I do not hesitate to recommend to inexperienced teachers the word method, because of its using an aggregate that is more manageable, especially to those who have come up from an intimate ac-

quaintance with the alphabetic and all other "spelling methods" of teaching reading. After a very few lessons by the word method, the child will know enough words to form sentences. These he will read; and the new words, which are introduced apart from sentences, will immediately be put into sentences, and his scope of reading be thus extended. After a few lessons by the sentence method, the child will begin to detect the common elements in the several sentences, and will thus have his attention directed to individual words apart from their place in any one sentence. As soon as this point is reached the two methods are practically identical, for when new sentences are offered they will usually be found to contain some elements with which the child is familiar. As he becomes familiar with more and more sentences, the unfamiliar parts of newly presented sentences will grow less numerous, until in time the teacher can present many new sentences in a lesson and not have a totally new word appear in any of them. The combinations of words will be new, but the individual words will all be familiar. By either method our aim should be to lead the child to take in the sentence as a whole *before he begins to give oral expression to it*; this will insure smoothness of reading as nothing else will.

Having presented what is regarded as a true philosophy of the several methods of teaching primary reading, we shall now give a detailed statement of the steps in the word method. This one is chosen, rather than the sentence method, because, of all the methods which are true to our general philosophy of teaching, this one presents the least number of obstacles to dampen the ardor of the

untrained teacher; while the teacher of experience and philosophic insight will be able to embrace all the chances of gaining an advantage in the use of sentences rather than isolated words.

Word Method.

1. Word-learning Period. (1) Time, about four to six weeks. This is given merely as a guide, and is not intended as a statement of a fixed period. This arbitrary learning of words as wholes may be continued with profit *as long as the child's interest in the work lasts*. The greater the number of words he can recognize instantly as wholes, the more naturally and fluently will he read. Even after word analysis is begun, we should keep up this learning of words as wholes just as long as he needs help in naming new words. When some of the phonic elements have been learned, the new words which contain only the elements he knows should be worked out by the child, and not arbitrarily told to him. This will give him constant practice in applying his newly acquired knowledge of phonics, and only through such constant application can he gain a mastery of the system which will render him independent of a teacher. But all words he may need, which fall outside the scope of the phonics he has yet learned, must be presented to him arbitrarily as wholes.

(2) Teach several hundred words. This also is given merely as a guide. Some children can take one hundred words in the time others require to learn fifty. Let the words be given as fast as the average of the class

can take them and remember them with certainty. Be sure that the children hold the words as they are taught ; if this is not done, they will grow more and more confused as additional words are presented, until they become completely bewildered. In all teaching, and especially in the early stages of subjects, it is a saving of time if we use time in becoming absolutely sure that pupils are getting what we present.

The words chosen for this stage of the work should be such as the child uses in his talk. A very good plan is to look through the early pages of the first reader used in the school and pick out from there the words to be taught. Make occasion, in your oral work, to get the child to use these words as you desire to teach them. This will give you the assurance that he knows the meaning of each word used. When he has spoken the word, you can then present the same to him in form upon the blackboard. Of course it will be necessary for you to tell him that you are giving him the same word he has just used. The child must not be put to guessing ; he should be given the form, with the assurance that it is what he has just said, and then be required to remember it. At this time no reference should be made to the letters which compose the word. We want him to recognize the word in its entirety. If he confuses words that are similar in appearance, their differences should be pointed out as a means of distinguishing them. For example, if he confuses "creek" and "creep," simply direct his attention to the endings and thus impress the points of difference, but do not refer to them as *k* and *p*. That you may impress it upon his memory, the word

should be written in many different places upon the board, be erased and reproduced for recognition, be put in connection with various other words previously learned, etc. Use many devices for assuring yourself that the word is not known simply in some one position. These devices will be the best means of fixing the forms firmly in the child's mind.

Several varieties of seat work may be given at this stage of the child's advancement. Remembering that all the work done by the teacher upon the board is done in script and not in print, we may have the child copy the words taught to him. Give him a number of small cards containing the words taught (and others to be taught), and have him pick out and arrange in lots all the words he knows ; these words may then be written. If you have books printed in the script type, let him pick out, from pages assigned, all the words known, and then write them. From the time he has learned enough appropriate words, have him construct and then write many sentences.

Do not forget that in this work persistent review, with all the variety and interest you can introduce into it, is the secret of success. The words of previous days should keep coming up in new connections, whenever they can be used. Introduce all kinds of appropriate games for the sake of drilling the children upon old words, and at the same time robbing the drill exercise of its mechanical drudgery. This does not mean that school work must all be made play, for school work that is significant to the child should have sufficient interest attached to the significance ; but it does mean that we

must do something to keep the requisite drill work of children from becoming a lifeless routine.

2. *Power-giving Period.* During this period the work in word analysis is done. This is for the purpose of giving to the child the key to pronunciation of all words, and thus rendering him independent of a teacher or any other helper, excepting a dictionary. It is necessary that the child should know three things to enable him to pronounce new words independently. They are, letter forms, elementary sounds, and the association of form and sound. For the purpose of making it easier to refer to the letters, which are now to be carefully studied, and also for its use in other connections, we should during this stage teach the letter names. These names should not be given, however, until the child is first impressed very forcibly with the sound values of letters.

(1) *Elementary sounds.* These are best learned by a form of slow pronunciation. For this purpose select suitable words from those already learned as wholes. Until this work has been done, children will think that a word has as many sounds in it as it has syllables. Let this work be done at first exclusively by the teacher, so that by thoughtful listening the child's hearing may be trained to discriminate accurately between the different sounds. When this ear training has been accomplished to a sufficient extent to enable him to hear the important sounds when made accurately, he should then be trained by imitation to make the sounds himself. Remember that this exercise in slow pronunciation is to impress upon the child that words are made up of dis-

inct sounds. When this truth is realized he then sees the significance of elementary sounds and is prepared to make them a distinct matter of intelligent study.

(2) Letter forms and names. These are best learned by making them. At this point the superiority of the blackboard over any chart or other ready-made set of letters is manifest. The teacher should be a good, plain writer. When a letter is to be studied, it should be made, before the class, upon the board. Great care should be taken to impress upon children the point of beginning and the course to be followed in making the letter. Then children should be allowed to trace the letter made; after this should come the effort to make the letter at another place, but with the teacher's model before them; finally they should be required to make the letter with no copy present. Keep in mind that this is not primarily an exercise in penmanship, but a lesson to impress a letter form. The best processes in penmanship should not be violated in this exercise, however, and, on that account, we should have children make the letters at first in a large, bold hand, preferably upon the blackboard.

The letters should not be learned at this time in the order of the alphabet, but in groups that will bring into prominence the unlike points in similar letters, as *m, n, u, v, w*; *i, e*; *a, d, o*; *b, h, k*; *d, t*, etc. When the letters are learned and can be recognized with absolute certainty, they should be arranged in alphabetical order and be committed in that order. In practice it will be found that learning the letter forms and their order in the alphabet is a very small task for most children. The

repetition of the forms in words learned, and the constant pronunciation of words, especially where sound and name of letter are much alike, will impress these letter forms and names upon a great proportion of the class. Let us never forget that children do much thinking which is not definitely directed by us in the class, and we should therefore work upon the constant assumption that they possess brains.

(3) Association of letter and sound. This is best learned by a process of spelling. The slow pronunciation, used to reveal the sounds in words, being done as it is with the words written before the class, will enable the children to associate many sounds with their appropriate letters. It is true that, for a time, the learners may not know them as letters, but rather as parts of the words; but, if this is true, it is all the better for the learners. Letters will be seen to have value only as the elements of words; and, if that is revealed when we are not aiming at it, we shall have but one more instance of undesigned teaching, which meets us at every turn. But when the sounds have been distinctly presented and the letter forms are learned, it will be found that the undesigned result is not complete. To these unknown elements we shall have to give some special study.

One thing should be most carefully guarded against, namely, pronouncing the word immediately after saying in order the letter *names* which are found in it. This will constantly force upon the learner the idea that the letter names, when properly uttered, constitute the spoken word,—a view which we have found to be entirely without foundation. When we say c-o-l-l (letter

names), *colt*, we give to the child the idea that what we utter makes the word. If we say c-o-l-t (letter sounds), *colt*, we impress the truth that what we utter forms the spoken word. This then forms the key to the method of spelling which should be used when we endeavor to establish the association of letters and sounds. The words used may be pronounced; the letter names in them may then be given, though they are not of any value in this exercise; then the letter sounds should be given, and immediately afterward the word should be pronounced. This will enable the child to associate correctly the phonic elements of the spoken word and the letter forms of the written word.

With these three elements known and the habit established of looking at words (not letters or sounds) as the units in reading, and of viewing these words as the signs of distinct meanings, the child has in his possession the key to all reading. Now, having been set right in this most important of the school arts, the child needs but to apply his information and to continue the exercise of his habit of regarding word meanings, and he will become an expressive reader. He needs more enlightenment than this and greater skill than he yet possesses to make him an artistic reader, but these things will be furnished in the advanced reading exercises and in all other exercises which add to his store of knowledge and wisdom.

General Suggestions. In all blackboard work in primary reading *use script letters*, because you can make them better and because the child never needs to learn to print. If he does learn to print, it will only injure his penmanship, and he will, moreover, be forced to drop

it as soon as he is through with it in primary reading. If script is used, the *letters are connected*, and hence the words appear as units. This being so, there will be less tendency on the child's part to "spell" words, even if he has learned the letters at home.

In making the transition from the script to the printed book, *do not magnify the difficulties*. The child will find nothing to appall him if the teacher does not previously announce that now he is about to undertake a task that will tax his powers to their utmost. Remember that children naturally notice resemblances rather than differences among things. The difference between script and print is no greater than the difference between different styles of script, and yet we expect children to read the writing of one person if they are able to read that of another. Simply present in script a sentence that you can duplicate in print; have the script read, being sure that every person knows it; now with the printed duplicate before them, ask for volunteers to read it. In every ordinary class there will be persons who will see the similarity and will read the sentence in print. Now, without further comment, excepting perhaps to encourage them in the work, assume that they can read print and refer to it or to the script indifferently. If the teacher makes no more of the imaginary difficulty than this, the children will make the transition and almost never discover a difficulty.

When sentences containing a common idiom are used, children will soon grow familiar with the idiom; and, unless we proceed with caution, they will repeat the idiom mechanically, as a child in the nursery will repeat the

story of his picture book when he sees the picture. Fond parents often think such a child can read, when in reality he has merely learned to "speak a certain piece" in connection with each picture. These idioms should frequently be changed in order to avoid this mechanical result.

Remember that a child can *spell* without knowing the letters, or even that there are such things as letters. When a child can make as a whole a word you may call for, he can spell that word. He may not be able to say the names of the letters which form the word, but this is not essential to spelling. Spelling is simply putting together letters in such a way as to form words. This the child does when he writes whole words, and, in the act, he employs the only form of spelling that is of any great value—written spelling.

Though the blackboard is preferable to a chart or a book for most of the early work in primary reading, there is a certain amount of material that one can with profit keep in permanent form and have ready for use at any moment. To supply this a chart is a valuable adjunct. These cost more money than some districts can or will spend for such material, but fortunately this need not act as a barrier in the way of any earnest teacher. A few cents and some mechanical ingenuity will enable him to surmount this obstacle. Buy some sheets of manila wrapping paper, cut the size you may desire for your chart; paste upon these sheets such pictures, cut from cast-off magazines or other periodicals, as you have found by experience to be interesting and valuable to children in their language work; below the picture

on a given sheet, write the sentences you wish to teach from that picture ; around the entire margin write words, — those found in the sentences you teach and others, — making a complete border of plainly written words. Repeat this general plan on the other sheets, being careful to put repeated words in different positions on the margins of the several sheets. Thus constructed, you have the best chart *for you* that could be made, because you have embodied in it the things which your own thought has dictated as the items to be brought out of each picture. This will rob the process of its forced mechanical character on your part.

The best use to which such a chart can be put is as a means of review. The sentences found upon it can best be developed in the oral language class, to be reproduced for reading, first upon the blackboard. Then the chart can serve its best purpose in supplying material for review. In the early learning of words it helps a child greatly if he can see how they are made. Increased permanence is given to the impression if we add the activity of his motor side in having him make these same words.

Gradually lead children to read *whole stories*, rather than merely disconnected sentences. A love for proper reading should follow close upon the ability to read. This love can be developed only by bringing the child into touch with consistent and valuable reading matter ; incompleteness always has a tendency to divert the attention, and in time to render the work aimless. The best modern reading books for the grades are carrying out this idea, and are framing their sentences, not only with

a view to introducing words in a certain order, but also with reference to the consistency of the ideas expressed. In them, therefore, the sentences will stand somewhat apart, for the purpose of making their observation easier ; but the succession of sentences marks the continuation of a consistent body of thought.

As soon as the children are capable of doing it, have them read easy exercises from the *daily papers* and other publications. Show to the child, as soon as possible, that he is learning to do just what older persons do. This will make his interest greater and more real. It will unite the school with the world more closely, and will make the occupations of the school seem less fictitious than they ordinarily do.

Be very careful to interpret wisely the expression, "a child's vocabulary." This often conveys to people an incorrect idea. There is not one set of words for childhood and another set of words, expressive of the same ideas, for mature life. There are *ideas* which are uppermost in the child's mind and other ideas which engage the attention of developed minds. But, when the child has an idea, the word given him to express it should be the word that older persons would use to express the same idea. There is no rational ground for either the general prevalence of "baby talk" on the part of those who have to do with children or the belief that a small word must be used for every idea with a child. Words are not difficult in proportion to their size. It is the idea that is the troublesome matter, and, when that is mastered, a large word is as simple a means of expressing it as a small word, provided always that the large

word is not specially complicated in its pronunciation. Authorities justly condemn the practice of making children "entertaining playthings to pass away the time for adults." When it is done it is always at the expense of the child's healthy development.

Furthermore, to improve a child's vocabulary means more than simply to increase the number of words at his command; it means also to increase his understanding of the significance of words which he already uses. This can be done both by showing the wider applications of a word in the sense in which he knows it, and also by giving him the additional meanings of the word.

When the child begins the use of a reading book, and even when he is reading sentences from the board, it is a good plan to call upon him frequently to *tell* the truth of the sentence, paragraph, or stanza, *before permitting him to read it aloud*. He should never be permitted to begin the expression of a sentence until he has seen the entire sentence and is sure he can pronounce all its words. If, in addition to this, we require him to know the significance of a sentence before permitting him to read it aloud, we shall do much toward establishing the habit of regarding meanings as paramount, and words as valuable simply in so far as they represent meanings. The effect of such habit upon the child's future is almost immeasurable. It will prevent "reading over" things in the listless manner that is so prevalent, as well as the practice of committing to memory simply the language of such matters as should be addressed to the understanding.

Advanced Reading.

It is not intended that the course to which the name Advanced Reading is given shall be so advanced as to require a specialist in this department to teach it. But, while attention is to be directed here to all that part of reading which follows a mastery of the fundamental mechanics of reading as treated above, it is well to remember that there is no fixed upper limit. If a specialist in reading, who can do all the finer work in expression, is in the schools, all the better for the schools, provided other things get their due proportion of attention. We shall not endeavor, therefore, to discuss in this connection all the problems of expression, but rather to present the method and philosophy of reading as it may be appreciated and applied by the teacher of ordinary equipment.

From the outset, one important distinction must be kept in mind ; that is, the distinction between the drill which is to increase one's skill in the use of the organs of expression, and the drill which one is to get in the effort at real expression.

The first of these rests on the assumption (and the assumption seems warranted) that people generally have either some defect in the organs of expression or some bad habits of expression which need to be corrected, before they can give the best utterance to thoughts and sentiments which they may possess. It is well known that, by appropriate exercises, a throat naturally weak and troublesome may be made strong ; that the breath, usually uncontrolled and escaping in convulsive movements, may be so mastered as to avoid waste and to be

converted into a regular, steady tone ; that angular and awkward movements of the body may be supplanted by graceful and easy ones. But all of these things, and many others, such as range and flexibility of tone, gesture, poise, and facial expression, presuppose, on the part of the teacher, a special preparation not generally found in those who preside over our schools. The elements of clear articulation and correct pronunciation, however, may be attended to by all qualified teachers, and should receive attention throughout all the grades and in all classes where oral language is used. The ability to do these things must become crystallized into the habit of doing them, or else the child, with all his ability, will fail to read in a smooth and artistic manner. To this end, drill upon suitable words should be frequent ; but in such drill the words should generally be divorced from thought — should not be used in sentences.

When the words are put into sentences, so that the learner may get drill in the utterance of them in different series, we should do whatever is necessary to keep him from confusing, in his thought, such an exercise in vocal utterance with real reading.

Examples : —

Peter Piper picked a peck of pickled peppers.

Where is the peck of pickled peppers Peter Piper picked?

Some shun sunshine. Do you shun sunshine?

With these obvious exceptions attended to we must dismiss this phase of our problem, therefore, as being unsuited to existing conditions ; and, while we deplore the fact, continue to entertain the hope that the time is not

far distant when this element of professional fitness will be added to the steadily increasing list of advances along other lines.

Assuming, then, that we must take the child as we find him, with his mechanism of expression distorted, and no means of remedying it at hand, we must address ourselves to the second element of our problem, — that of improving his ability to use an imperfect instrument in real expression.

As a comprehensive guide to all that shall be said, the following is announced :—

Practical mastery of time, pitch, force, quality, slides, etc., can be secured only by making them the outcome of an appreciation of the thought and feeling of that which is to be read.

Definite mechanical rules regarding pitch, pauses, slides, etc., are usually worse than useless. Reading is giving expression to a state of mind ; it is not the utterance of a series of sounds suggested by the printed page. The flexibility of voice which characterizes earnest conversation may be taken as the best example of the end to be aimed at in reading. Not that reading is the same thing as talking ; it is a much more difficult act. In talking we have our own ideas, their flow is determined by a goal which we have set for ourselves and by the unchecked tendency of the mind in reaching its ends ; in reading we are confined to the ideas of another, which oftentimes we do not fully appropriate, and we are hampered by the necessity of giving direction to our thoughts step by step as we interpret the printed page. This effort to comprehend the meaning and aim of an

author, which is too often not completed before expression is begun, hinders the rise of appropriate emotion. We do not thus think his thoughts after him, and live the experiences through which he passed, but we exhaust our energies in the purely intellectual effort of finding out what his thoughts and sentiments were. There is a vast difference between the mental effort required to search out the words and their significance, and, on the other hand, to transport one's self in imagination to the midst of a scene such as must have filled the mind of the author when he wrote the following : —

Have you seen an apple orchard in the spring?
 In the spring?
 An English apple orchard in the spring?
 When the spreading trees are hoary with their wealth of promised glory,
 And the mavis pipes his story in the spring?
 Have you plucked the apple blossoms in the spring?
 In the spring?
 And caught their subtle odors in the spring?
 Pink buds bursting at the light, crumpled petals baby-white,
 Just to touch them a delight in the spring!
 Have you walked beneath the blossoms in the spring?
 In the spring?
 Beneath the apple blossoms in the spring?
 When the pink cascades were falling, and the silver brooklets brawling,
 And the cuckoo bird is calling in the spring?
 Have you seen a merry bridal in the spring?
 In the spring?
 In an English apple country in the spring?
 When the brides and maidens wear apple blossoms in their hair;
 Apple blossoms everywhere, in the spring?
 If you have not, then you know not, in the spring,
 In the spring,
 Half the color, beauty, wonder of the spring.
 No sight can I remember, half so precious, half so tender,
 As the apple blossoms render in the spring!
William Welsey Martin, quoted in Curry's "Lessons in Vocal Expression."

Since it is necessary that the child should get himself into an appreciative state of mind before he can read with real expression, it follows that he should do much silent reading to familiarize himself with the author's words, and also be led by appropriate conversation and other means into the state of mind to be expressed, before he undertakes to read aloud. When the language is his, and the sentiment to be expressed is entered into, he will approach in his reading as near as possible to the ease and unrestraint of talking. With either of these elements neglected, no rules for modulation, pitch, rate, or any other objective quality of expression will be sufficient to render the child's reading anything else than artificial.

Let me repeat, then, that while talking through the nose, mumbling words, misplacing accent, or other errors in articulation and pronunciation may all be corrected by definite drill exercises of a somewhat mechanical nature; and, while definite directions may be given to guide the learner in such drill exercises, these things are only the means of expression, and do not constitute the real essence of the matter. While this is being done (and its importance is conceded), we are merely getting the child's instruments of expression into good working condition, so that they will serve him when he comes to the act of expression. We are habituating his mechanism to correct action, whereas it has been growing accustomed to an incorrect form. Expression or reading comes only where there is a vital thought and sentiment to be made manifest. For this there are no directions for the exhibition of external feats that are adequate,

if the individual is not filled with the sentiment itself; if he is thus filled, directions are unnecessary. Whatever emphasizes these externals renders the reading a mere matter of manner, without touching the real inner cause of true expression.

That we may not seem to be beating at mere shadows in urging the fruitlessness of directions respecting pauses, inflection, stress, etc., we append the following rules, merely to show what may be found in works of recognized authority in a certain kind of elocution, and what one may hear taught in a large number of classes in reading:—

“In general make a slight pause at a comma; a longer pause at a semicolon; and a still longer pause at a period.”

“A rhetorical pause should be made between the subject and the predicate of a sentence when the subject is emphatic, or when it consists of a phrase or a clause, or of a noun modified by a phrase or a clause.”

“Make a rhetorical pause before a clause used as a predicate nominative, or as the object of a verb.”

(In one work alone, ten rules like the above are given for pauses.)

“Questions requiring *yes* or *no* for an answer have the rising inflection, except when very emphatic.”

“Words repeated in surprise take the rising inflection, and are emphatic.”

“Words and phrases of address, unless very emphatic, take the slight rising inflection.”

(In all, there are twenty-two rules for rising, falling, and contrasted inflections.)

Further, we are told that the "radical stress is the stress of animation, of earnestness, of assertion, of command, and of passion."

Again, "Fast or quick movement is the characteristic rate in the expression of mirth, fun, humor, gladness, joy, and haste." "Joy, mirth, and gayety incline the voice to pure tone and high pitch. Calling to persons at a distance inclines the voice to high pitch and pure tone. Anger, courage, boldness, and exultation incline the voice to high pitch and loud force."

It seems useless to give more examples to show how stilted and artificial all reading must become that is produced through the observance of rules like the above. Where the rule does not contain more complicated conditions than any intelligence can embrace while occupied in reading, it is either untrue or an expression of surface results which never need to be aimed at, *if only we get the reader into the state of mind portrayed in what is being read.*

Our one fundamental guide, then, to all true and successful teaching of advanced reading is this : —

Give mechanical drill in whatever will improve the organs of expression and habituate them to proper action. When thought and sentiment are present to be expressed, familiarize the child first with the language in which they are expressed ; then do whatever is required to bring him, at least in imagination, into the state of mind which is to be expressed.

If, when these things are observed, the child reads too fast or too slow, in too high a key or with faulty inflections, you may attribute it to misunderstanding of what

is being read, to bad habits of customary speech similar to those now manifest in his reading, or to "stage fright," which causes lack of control, even without the individual being aware of it. When the teacher finds which of these is the cause of the bad reading, he knows where to apply a rational remedy for the present defect ; if he cannot find the cause, no number of rules for correct reading will be of any avail.

Remember, finally, that oral reading is an art ; and it is an art, like instrumental music, which employs the muscles of the body (a mechanical art). Therefore, no matter how large a number of definitions and rules one may recite with accuracy, he will become a successful reader only by practicing, under rational guidance, the muscle exercise of expression. The only rational guidance for such exercise must come from the mind of him who exercises, and, to this end, the reader must be filled with that to which he would give expression.

In corroboration of this view, take any class of ordinary intelligence, and with maturity enough to appreciate what is to be read ; converse with them, explain to them, and question them till you get them into sympathy with the sentiment to be expressed ; then, without a word about any of the mechanics of reading, have them read the appended selections. Note how they vary the pitch, time, quality of tone, inflection, pauses, etc., to suit the varying sentiments aroused in them. If they give what you regard as a wrong emphasis, or pause at the wrong place, say nothing about changing the emphasis or the pause, but ask such questions as may be answered in

the language of that which they are reading, and note how naturally they will correct the faulty emphasis or pause.

TEST EXERCISES IN ADVANCED READING.

Away to the hills, to the caves, to the rocks, —
Ere I own a usurper, I'll couch with the fox;
And tremble, false Whigs, in the midst of your glee,
You have not seen the last of my bonnet and me.

Scott.

Crossing the Bar.

Sunset and evening star, and one clear call for me!
And may there be no moaning of the bar when I put out to
 sea,
But such a tide as moving seems asleep, too full for sound and
 foam,
When that which draws from out the boundless deep turns again
 home.

Twilight and evening bell, and after that the dark!
And may there be no sadness of farewell, when I embark;
For tho' from out our bourne of time and place the flood may
 bear me far,
I hope to see my Pilot face to face when I have crossed the bar.

Tennyson.

Let our object be our country, our whole country, and nothing but our country. And, by the blessing of God, may that country become a vast and splendid monument, not of oppression and terror, but of wisdom, of peace, and of liberty, upon which the world may gaze with admiration forever.

Daniel Webster.

The Wind That Kissed the Rose ; or,
The Scandal in the Garden.

All the garden was astonished
At the scandal running there ;
All the mother-flowers admonished
All their daughters to beware ;
Every pretty pansy pouted
Underneath her Quaker hood,
And the peonies fairly shouted
With amazement where they stood.

And the poppies from their languor
Seemed to waken for a spell,
When the columbines in anger
Clattered every purple bell.
While nasturtiums, stern in duty,
Leaned against the garden wall,
And each portulaca beauty
Shut her crimson parasol.

All the larkspurs in their places
Grew as blue as blue could be ;
And the sunflowers turned their faces,
That they might not seem to see.
And the modest morning-glory
Hastened all her ears to close,
When she heard the dreadful story,
That the Wind had kissed the Rose.

Oh ! was ever such a scandal
In the garden heard before ?
And the wind — the saucy vandal —
They would countenance no more ;
And the wanton rose should rue it
Till the moment of her death.
There was no mistake — they knew it,
For they smelled it on his breath.

And in virtuous indignation,
 How they toss their pretty heads,
 As the terrible relation
 Round about the garden spreads!
 But their modest daisy sister,
 When she heard them all condemn,
 Wondered how they knew he kissed her,
 If he was n't kissing them.

Lee O. Harris.

On His Blindness.

When I consider how my light is spent
 Ere half my days, in this dark world and wide,
 And that one talent which is death to hide
 Lodged with me useless, though my soul more bent
 To serve therewith my Maker, and present
 My true account, lest He returning chide,—
 Doth God exact day-labor, light denied?
 I fondly ask:—But Patience, to prevent
 That murmur, soon replies: God doth not need
 Either man's work, or His own gifts: who best
 Bear His mild yoke, they serve Him best: His state
 Is kingly; thousands at His bidding speed
 And post o'er land and ocean without rest:—
 They also serve who only stand and wait.

Milton.

Rabbit in the Cross-Ties.

Rabbit in the cross-ties,—
 Punch him out—quick!
 Git a twister on him
 With a long prong stick.
 Watch him on the south side—
 Watch him on the—Hi!—
 There he goes! Sic him, Tige!
 Yi! Yi!! Yi!!!

Riley.

General Suggestions. Every teacher should be a clear, easy, sympathetic reader, because the reading of the teacher will become very largely the model for the children. Children should hear much good reading of a grade suited to their capacity. In this way their taste for suitable reading may be cultivated, their fund of information greatly increased, and their capacity for enjoyment enlarged.

Though the teacher should read much to the children and serve as their model, still they should not be allowed an opportunity for direct imitation. If they are studying a certain selection, the teacher may read a paragraph; but the child should not be called upon then to read that same paragraph. The teacher may with profit take this means of interpreting for the children the spirit of a selection, and the children should be required then to read the *other parts* of the selection.

In the reading class there should be many exercises that will require the learners to get thought. This may be done by paraphrasing, epitomizing, illustrating by drawings, reviewing, criticising, or discussing the various writings.

Beyond the third, or at most the fourth, reader there should be very little work done from the ordinary reading book. If the series of books in use contains articles that are worth knowing, they may with profit be used for exercises in reading. But, if the books contain articles chosen merely with a view to having them serve the purpose of a reading exercise, they should be set aside, and in their place should be substituted such books as geographical readers, historical readers, nature

readers, stepping-stones to literature, and actual literary productions in poetry or prose; in a word, such works as present something to learn that is worthy of a child's time and effort at the same time that they furnish the material for a reading exercise.

All that has been said concerning the unwisdom of giving children rules for pitch, inflection, emphasis, etc., as a means of making their reading natural, should not deter the teacher from making himself familiar with all these elements of effective reading. He should know what they are, because then he will know what different elements need attention in training the child to read. It does not follow from this, however, that the way to make a child a good reader is to call his attention to the plan of emphasis, inflection, pitch, etc., and to have him read according to rules of each. If we wish a child to learn to walk gracefully, we do not call to his attention the method of moving his arms, feet, hands, etc., though the director should have knowledge of each of these items; we direct his attention to the one central element, the carriage of his body; then we have him fix his mind upon an objective point, and he moves toward it with ease and grace. Just so in reading. When we have trained the vocal mechanism to act with ease and correctness, we should stimulate the mind to an appreciation of the sentiment to be expressed, and then the expression will follow with naturalness; pauses will be observed, as in talking; inflections will be correct; and the pitch and time will of necessity reveal the state of the reader's mind.

CHAPTER XIV.

LANGUAGE LESSONS.

LANGUAGE lessons must be clearly distinguished from the earliest lessons in formal grammar, with which they are often identified, because the aims of the two subjects are different and the resulting methods must be different.

The aim of the language lessons is the development of proper *habits* in the use of language. This can be done only in the way in which all habits must be formed, — by repeating persistently the acts which we desire to make habitual. The study of rules of language will not accomplish the desired end in the language class. True, a knowledge of the rules of syntax, which should be given later, will fortify the learner in his use of correct forms, and also serve as a guide to the correction of any improper forms to which he may have become accustomed. But his knowledge of such rules cannot be taken as a guarantee of his use of the forms which they prescribe. Language, and especially oral language, must be wrought into the very being of the child, through use, so that, when his mind is occupied with a subject of thought, his language mechanism will work in obedience to that thinking, and proper expression will be the easy and natural result. Knowledge of correct forms cannot accomplish this; nothing but a habit of correct doing can bring it about,

Our first position, then, is that the language class is not the place for the study and recitation of easy definitions in grammar; neither is it the place for much recitation of the rules of grammar. If rules are given at all, it is to the end that they may be *used* in the construction of the child's oral or written language. It is the place for him to think and talk and write; and while this is being done, the forms of his expression should receive the attention of his teacher. If they are correct, they should be emphasized and repeated; if they are incorrect, they should be put aside and correct ones substituted.

But a child cannot be expected to manifest a lively interest in mere forms of language, unless he is given something interesting to think about, which will make an occasion for his use of language. This, then, indicates that, if our method of procedure is to be a wise one, it must not be a purely formal one, in which the subject matter is of no consequence, and the form of expression is everything. Doubtless, if children were interested enough to desire correct speech, such formal work would suffice to give it to them; but when we are compelled to arouse their interest in learning at the same time that we are engaged in helping them to learn proper language forms, we should select, as the occasion for their use of language, the subjects about which they may wish to speak or write.

Sentences should, therefore, be taken as the language units with which to begin this study. In these the correct or incorrect forms will appear. Now that the words are associated with thought, they constitute language; apart from thought, they are simply sounds or forms.

Single words from these sentences, which may need especial study, may now be isolated for that purpose, because at this time the child can fully realize the aim of such fragmentary study, and is thereby rendered intelligent in his work.

Since language lessons are for the purpose of fixing habits in the life of the child, we should note carefully the two antecedent conditions of habit formation. Sometimes an ideal can be worked out in the intelligence of the learner, and a distinct effort be put forth to reach it by means which the learner fully comprehends. This, however, is confined pretty largely to the few choice souls of superior mold. More frequently the ideal must be presented by another person, and it is generally presented with greatest force, not by precepts, but in the life. This, then, is copied by the learner either intentionally or unintentionally until it becomes the fixed condition of his life. The teacher's use of language, therefore, both in the language class and elsewhere, must largely condition the child's use of it. It is perhaps equally true that the child's environment at home and elsewhere will play an important part in determining his language habits; but this, if it is bad, the teacher can only deplore and labor to overcome. His own part he can prevent from being wrong. Proper thinking (such as can be engendered by familiarity with the best in literature) and proper speaking, on the part of the teacher, will do much toward insuring success in the language classes of the school.

The actual speech and writing of the children should constitute the material for the language class. Every

recitation affords an exercise in language, but such incidental work is not enough. Bad habits can easily be formed incidentally, but they cannot be removed and the corresponding good ones substituted except as the result of patient effort. The language of children should be carefully observed; their errors should be noted; these should be classified, and be used as the material for the language lessons; evidently, then, no language book should be in the hands of the learner for this work. The teacher must decide upon the subject matter for each day's lesson, and the child's work upon the lesson will be to carry out what has there been taught. The teacher may have a book, and should indeed have several different ones; from these he may get suggestions as to what should be looked for, how best to classify the common errors, in what order they may best be corrected, etc. It is in this way that the experience of eminent teachers may be made available to those less advanced; and this is making a rational use of the elementary language book.

Scope of the Work.

It is not the intention to point out in this place the detailed forms which are to be taught, and the specific plans by which this is to be accomplished. We shall aim rather at giving a larger survey of the work to be done, and trust to the teacher to get detailed information from books on language.

1. *Grammatical Correctness of Expression.* In most language teaching this is the first and only thing that receives attention. Certain well-established errors have

pushed themselves so much to the front in the language of school children that teachers have grown to expect them ; and, true to the traditional idea of their critical office, they are generally prepared to detect and correct them. Too much cannot be said in praise of the effort to improve the language of children in this respect. Correct English is one of the most evident signs of good breeding, and, without it, scarcely any amount of social polish or even moral good-will can atone for its absence, or give one a place in the midst of men of education. But have we always sought to attain this end by wise means? Much time has been given to reciting definitions of the various parts of speech, or rules of syntax for the government of various forms in sentence construction ; great effort has been expended upon parsing and the correction of "false syntax" ; weary months have been consumed in the analysis of detached sentences, — and all this with a view to correcting, in some mysterious way, the child's use of English, while at the same time he is permitted, through speech and writing, in class, upon the playground, everywhere, to fasten more and more firmly upon his life the incorrect forms of daily use. This he does without any thought that the mental effort expended upon his lessons in elementary grammar might be put to so much greater profit, at this time, if directed to the improvement of his actual speech and writing. He is being deluded into the belief that language is a thing to be gained from books, whereas it has been fastening itself upon his life from babyhood ; and the same practice that fixed it then must, in so far as there are incorrect forms present, be

appealed to in ridding the child of the false and establishing upon him the true.

Two general forms of correct language should engage the teacher's effort, — oral language and written language. There are errors that can appear only in speech, others that are confined to writing, and still others common to both. Because of this, the language lesson must not be thought of as merely a lesson in written composition. The amount of oral language work should be far in excess of the amount of written work.

Correct pronunciation and articulation, while in a peculiar sense items for the reading class, should receive most careful attention in the language class also. Spelling, especially of plural forms, possessive forms, etc., is a matter which should be specially watched in the language lesson. Capitalization and punctuation, quotations and abbreviations, syllabification and paragraphing, are all items which the language teacher must impress. Of the errors common to both speech and writing there are many, but all of these have been classified by Sarah L. Arnold under four distinct heads, — the plural forms of nouns, the agreement of noun and verb, the case forms of pronouns, and the tense forms of irregular verbs.

The order in which these items may be taken up, the details of the several cases given above, and the devices for teaching them successfully may all be obtained from the various language books now upon the market. As a guide to the inexperienced teacher, mention may be made of such books as Mary F. Hyde's "Practical Lessons in the Use of English," Mrs. N. L. Knox's "How to Speak and Write Correctly," and M. W.

Hazen's "First Book of Observation, Thought, and Expression."

2. *Clearness of Expression.* Correct forms of noun or pronoun with verb, and all other strictly grammatical elements of English sentences, might be fixed with accuracy in a child's speech and writing, so that everything uttered could be parsed or analyzed correctly, and still his language might lack clearness.

This imperfection may arise either from obscure thinking or from careless utterance, due to giving insufficient attention to our words. "All men who were there were not interested," is an example of the latter. If these words are interpreted just as they are uttered, instead of as they are meant, we must conclude that the speaker is saying something about *all the men* present at a certain place, and that he is asserting of them all that *they were not interested*. In fact, such a sentence is generally used when it would be clearer to assert that "not all the men who were there were interested," or that "some of the men who were there were not interested." This is what is meant, and therefore it is what should be said. Other suggestive examples are: "Lysias promised his father never to abandon his friends"; "Parmenio had served, with great fidelity, Phillip the father of Alexander, as well as himself, for whom he first opened the way into Asia"; "Thus ended the war with Antiochus, twelve years after the second Punic war, and two after it had been begun." In all of these the speaker doubtless knows just what is intended, but the careless arrangement of his phrases leaves the hearer in great doubt as to what is meant.

To distinguish by examples between the cases of careless utterance growing out of insufficient attention to language and the cases of loose and imperfect thinking is a very difficult matter, because both are revealed through sentences which fail to express exactly what should be said. In the above sentences, a few questions would reveal the fact that the speaker thinks correctly, but speaks with indifference. In such as the following it will generally be found that his thinking and his speech are both hazy and uncertain: "If three-fourths of a number is twelve, one-fourth is one-third of twelve, or four, and four-fourths are four times four, or sixteen"; "The product of the sum and difference of two numbers equals the difference of their squares"; "Feet multiplied by feet give square feet." Inquiry for the base in the first; the two numbers, their sum, their difference, which one is subtracted from the other, in the second; and the character of the multiplier in the third will reveal the fact that the trouble lies in the child's faulty thinking.

Improvement in clearness of expression must, then, be brought about by increased accuracy in thought. Well-chosen questions, which will require the child to analyze his expressions, are the teacher's means of forcing accuracy in thought. Not only will the child's improved thinking make his speech clearer, but also absolutely exact speech will react upon his thought, clarifying that and rendering him dissatisfied with mere approximations to the truth. Because of this, exaggerated or otherwise untrue forms of expression should be carefully guarded against or corrected. This may, in

time, become a matter of moral training, whereas it is at present only an exercise in language. Exaggeration and all other forms of untruth convey error to the mind, and hence deceive. When these become habitual the individual's life is then tending strongly in the direction which makes the confirmed liar. Only the addition of malintent, the purpose to deceive, needs to be made, and the person finds himself already equipped with the ability to execute his purpose with vigor.

3. *Force and Beauty of Expression.* Along with securing correct grammatical forms and clear, truthful expressions should come an increase in the force and beauty of language. This is not accomplished by having children recite and discuss the rules of rhetoric but by practice, just as correct grammatical forms must be made habitual, not by discussing grammatical rules, but by using in speech and writing the various truths of construction which are embodied in rules.

It is conceded that one's style *could* more certainly be made both correct and beautiful if he were master of the laws of grammar and rhetoric. But the difficulty in the way is that each child is acquiring a style of expression which may be both incorrect and ugly, while he is in that immature and imitative period of life which makes the comprehension of such laws impossible. If, then, we cannot hope to make his language fine through a mastery of the laws of style at the outset, we must look for some other means of preserving and developing a style throughout this period which will not vitiate the results of his future labors in composition, when the required maturity for the comprehension of laws is

attained. This means we have at hand in the child's splendid capacity of imitation.

In making use of this power, we should have the child commit and recite many suitable poems from the best writers. If entire poems are not used, let each extract be large enough to embody a well-rounded thought. See to it that the child grasps the truth, and then have him employ the author's superior language in which to clothe it. At least half a dozen such poems, selected with especial reference to their fitness for the grade in which they are used, should be committed each year. In time most of these may be forgotten, or at least remembered only in fragments, but their style of expression will have passed into the child's common speech and then it is his. Thus he should be aided to reflect only the best. This exercise in committing and reciting should not be confined to poetry ; it should embrace the forceful, elegant prose as well.

In conjunction with such recitation of committed parts should come also wide and varied reading, as well as much productive work in speaking and writing. At all stages of the work there should be more of impression from exalted sources than of expression from the child. But if ease and grace of language is to be acquired it must be through some expression in all the grades. Neither will it suffice to have only the oral or the written expression. The learner needs both. Otherwise it is possible for him to become quite fluent in speech, but labored and unmusical in the slower act of writing ; or he may find speech a forced and difficult art, while writing done in the quiet of his study may be easy

and graceful. For harmony of development and the full force and beauty of expression he needs smoothness and elegance in both forms of expression.

Set of Graduated Exercises.

The work in language should generally be pursued, throughout at least the first five or six years of school life, in connection with the following aids; and they should be used in the order named: (1) objects from nature, for work in observation; (2) pictures, for both descriptive and imaginative work; (3) stories, for reproduction, and later, for original work; (4) special language forms, such as letters (both friendly and formal as in society or business), business papers, and advertisements. Formal essays, orations, verses, etc., should not be undertaken until the child has a well-arranged stock of both ideas and language, secured through such means as are indicated above.

1. There should be many exercises, both oral and written, in describing common objects. At first these recitations should be largely conversational; later they may become more formal, and the child be required to proceed without the aid of the teacher.

2. Inanimate objects, animals, and plants may be described from memory. This may be done subject to leading questions from the teacher, or without aid.

3. Pictures may be used for descriptive work, and later, as the basis of a story. The characters pictured may be made to speak and act, and the entire scene be clothed with life and energy.

4. Stories related by the teacher without the help of

material aids, such as objects or pictures, may be reproduced by the children. Let this reproduction be both oral and written. To insure success at this point, and in many other places in primary teaching, the teacher should cultivate the power to tell a story well. Do not forget that details, uninteresting to the adult mind, are of vital moment to the child.

5. Stories may be prepared and given by the children, first subject to brief guides and outlines furnished by the teacher, and later without help.

6. Simple letters, with especial emphasis upon the recognized necessary parts, should be taught. In these, only one difficulty at a time should be encountered. The child may tell about his work in class, his play at school, or any other matter about which his mind is filled. At this time the thought should not be so difficult as to bother him; we are anxious now about a form of expression.

7. The various business papers (notes, drafts, checks, orders, receipts, etc.) should be written as they are studied in the arithmetic class or elsewhere. These should be copied at first from correct printed forms, but later they should be written in their entirety without reference to any form as an aid.

8. Exercises in paraphrase, amplification, and condensation should frequently be given. All of these test the thought power, and require a constant striving after new arrangements of words. Much aid will be given if the child's reading is directed to such authors as are eminent in any of the above respects. For these exercises well-chosen selections should be used, but they should not be

the masterpieces of literature. This work is done largely for the purpose of strengthening the child's power of thought through the process of interpretation, and then incidentally to serve as an exercise in expression. Literary masterpieces should generally be held intact, because their worth lies, not in the peculiar truth which they express, but in the striking fitness of the words and their arrangement.

9. Formal essays, narratives, sketches, orations, and verses should not be required until the child has a well-stored mind and a well-ordered vocabulary and style of expression. Then he should be made to understand clearly that he is to write *what he knows*, not what will necessarily contribute something new to the world's fund of information. At first each of these forms of original production should be prepared subject to an outline, given by the teacher to serve as a guide to the number and order of parts ; later, the outline may be replaced by general directions ; then, as the highest in point of difficulty, the child alone should produce a finished article, including choice of subject, plan, discussion, and rhetorical finish.

CHAPTER XV.

ENGLISH GRAMMAR.

MUCH confusion concerning the nature and purpose of English grammar has filled the minds of students of this subject in the past. Doubtless this has arisen partly from the identification of the subject with so many others, in the days of the early grammarians, when subjects were less differentiated than they are now; partly from our bondage to the past, as evidenced by the ancient definitions of grammar, which have been modernized; partly from the confusion of the terms "art" and "science," due to the changing meanings as they have come down to us from the classical languages; and partly from the general willingness to accept the statements of a book as final, thus relieving ourselves from the burdensome necessity of thinking.

In the first school grammar of which we have any definite knowledge (the Greek grammar of Dionysius Thrax, of Alexandria, written about 80 B.C. and translated by Thos. Davidson), this statement may be found: "Grammar is an experimental knowledge of the usages of language as generally current among poets and prose writers. It is divided into six parts: (1) Trained reading, with due regard to prosody (that is, aspiration, accentuation, quantity, and sometimes pauses); (2) explanation according to poetical figures (literary criticism); (3) ready statement of dialectical peculiarities and allu-

sions (philology, geography, history, mythology); (4) discovery of etymologies; (5) accurate account of analogies (what we generally mean by grammar); (6) criticism of poetical productions, which is the noblest part of the grammatic art (ethics, politics, strategy, etc., but not a discussion of the poetical merits of a piece)."

Thus it is seen that in the ancient days the term "grammar" was made to embrace a very large proportion of the subjects which form an entire modern curriculum of studies.

Passing over the long list of writers of grammatical text-books during the days of the early church and the middle ages (books written in Latin down to the time of Lilly's Grammar, which was written partly in Latin and partly in English), we note next the first independent "Grammar of the English Language," written by Lindley Murray, a native of Pennsylvania. In this book, which retained its popularity till the days of Gould Brown's "Grammar of English Grammars," we find the following definition: "English grammar is the art of speaking and writing the English language with propriety." The influence of Lindley Murray has been so marked that his definition has stood as the model for practically all of the grammarians of the nineteenth century, until we reach those whose books are now pushing to the front.

The confusion of art and science, as these terms are applied to English grammar, is nowhere better shown than in the book which, next to Murray's, was the most influential book on English grammar in the first half of the present century, — "English Grammar in Familiar Lectures," by Samuel Kirkham. On one page he

defines grammar as the *science* of language, and on the next he follows Murray in speaking of English grammar as the *art* of speaking and writing the English language with propriety. Not only is such confusion apparent throughout much of the work, but, in the endeavor to make an English grammar after the model of the Latin, he devotes much space to the discussion of controverted points which are in reality quite unimportant. On page 41 of the 36th edition we find the following: "Now five grains of common sense will enable anyone to comprehend what is meant by case. Its real character is extremely simple; but in the different grammars it assumes as many meanings as Proteus had shapes. The most that has been written on it, however, is mere verbiage. What, then, is meant by *case*? In speaking of a horse, for instance, we say he is in a good *case* when he is fat, and in a bad *case* when he is lean, and needs more oats; and in this sense we apply the term *case* to denote the *state or condition* of the horse. So when we place a noun before a verb as *actor* or subject, we say it is in the *nominative case*; but when it follows a transitive verb or preposition, we say it has another *case*; that is, it assumes a new *position or situation* in the sentence; and this we call the objective case." Unfortunately for this simple (?) treatment of case with nouns, the author has forgotten the subject of a passive verb, which does not represent an actor, and he might have done well if he had weighed carefully the statement of Bishop Lowth, made as early as 1762, with regard to the English language, — "Its substantives have but *one* variation of case."

The outlook is bright for correcting the disorders in the study and teaching of grammar, which arise from the three causes, illustrated by reference to the above eminent, ancient authorities. Their works are being superseded by later and better ones. But the troubles which arise from the fourth cause — the thoughtlessness of many who teach the subject — are more difficult to correct. It seems that the only possible alternatives are, either to annihilate all the erroneous writings on grammar, and then permit such teachers to absorb unquestioningly all there is left, or to render the teachers more critical, and to help them more fully to rationalize their work by aiding them to master the philosophy of the subjects they teach. The first is a practical impossibility; it is to the second, therefore, that we shall address ourselves.

Purpose.

Only two conflicting theories have been held concerning the purpose which English grammar is meant to fulfill. One is that it is an art, meant to improve the learner's use of language; the other is that it is a science, meant to give to the learner a comprehension of the structure of the language.

We have already insisted (Chapter XIV) that the improvement of the child's use of language belongs primarily to the language lesson; that this is brought about by an appeal to his power of imitation; and that these habits should be very largely fixed before the child begins the study of formal grammar (which should not be before the seventh or eighth school year). Now we

insist that the function of English grammar is entirely different from this ; that its aim is to develop mental power, and to give one an independent mastery of the structure of a great language system. If such study does incidentally improve the child's use of language, well and good ; so will a thoughtful study of history, reading, arithmetic, etc., though no one would argue from this that they are taught *for the purpose* of producing that end. It is admitted that the study of grammar may do more toward improving one's speech than the study of the other subjects named ; but even this does not alter the claim that it should be studied for a different purpose, and that its nature is such as to render it absolutely unfitted to produce the practical result of language improvement.

Upon this point let us have the authorities speak. In his preface to " Essentials of English Grammar," William Dwight Whitney says :—

" That the leading object of the study of English grammar is to teach the correct use of English is, in my view, an error, and one which is gradually becoming removed, giving way to the sounder opinion that grammar is the reflective study of language, for a variety of purposes, of which correctness in writing is only one, and a secondary or subordinate one — by no means unimportant, but best attained when sought indirectly. It should be a pervading element in the whole school and home training of the young to make them use their own tongue with accuracy and force ; and, along with any special drilling directed to this end some of the rudimentary distinctions and rules of grammar are conveniently taught ; but that is not the study of grammar, and it will not bear the intrusion of much formal grammar without being spoiled for its own ends. It is constant use and practice, under

never-failing watch and correction, that makes good writers and speakers ; the application of direct authority is the most efficient corrective. Grammar has its part to contribute, but rather in the higher than in the lower stages of the work. One must be a somewhat reflective user of language to amend even here and there a point by grammatical reasons ; and no one ever changed from a bad speaker to a good one by applying the rules of grammar to what he said. To teach English grammar to an English speaker is, as it seems to me, to take advantage of the fact that the pupil knows the facts of the language, in order to turn his attention to the underlying principles and relations, to the philosophy of language as illustrated in his own use of it, in a more effective manner than is otherwise possible."

In his preface to "Advanced Lessons in English Grammar," William H. Maxwell quotes from John Stuart Mill the following :—

"Consider for a moment what grammar is. It is the most elementary part of logic. It is the beginning of the analysis of the thinking process. The principles and rules of grammar are the means by which the forms of language are made to correspond with the universal forms of thought. The distinctions between the various parts of speech, between the cases of nouns, the moods and tenses of verbs, the functions of participles, are distinctions in thought, not merely in words. Single nouns and verbs express objects and events, many of which can be cognized by the senses ; but the modes of putting nouns and verbs together, express the relations of objects and events, which can be cognized only by the intellect (or thought) ; and each different mode corresponds to a different relation. The structure of every sentence is a lesson in logic."

On pages 238–240 of his "Lectures on Teaching" Mr. J. G. Fitch writes :—

"No doubt there is a sense, and a very true sense, in which all careful investigation into the structure of words and their relations gives precision to speech. But this is an indirect process. The direct operation and use of grammar rules in improving our speech and making it correct, can hardly be said to exist at all. . . . If therefore, we have in view mainly the practical art of using the language in speech or writing with good taste and correctness, this particular result is probably best to be attained by talking to the pupil, by taking care he hears little but good English, by correcting him when he is wrong, by making him read the best authors, by practising him much in writing, and when he makes a mistake, by requiring him to write the sentence again without one. It will certainly not be attained by setting him to learn Murray's, or indeed any other grammar. . . . If, however, that purpose (the practical) is contemplated as the first which is to be served in teaching (grammar), we not only shall not attain it, but we shall fail altogether to achieve the much higher ends which may be reached by the teaching of grammar as a science."

It seems to be evident, then, from the writings of such eminent authorities as those given above, that the purpose of studying English grammar is, not the development of habits, as in the language lesson and later in formal composition, but the disciplining of the powers of thought; not training to the right use of the English language, but the comprehension of the structure of the language.

If this is a correct view, then it follows that in grammar nothing is to be accepted on the mere authority of the teacher or from the models of writers; the appeal must not be made to the child's power of imitation, but in our teaching we must address ourselves to the child's understanding. Whatever is not comprehended must not be accepted as final. The memory should not be

taxed to hold expressions from either the teacher or the text-book, until the truth of such expressions has been grasped by the thought. If the study of grammar is an exercise in elementary logic, then the methods fitted to the logic class should characterize our teaching of it. Opinions may be entertained and questioned, discussions engaged in, relations of parts to each other sought out, — in a word, every proper thing may be done which will aid in revealing to the child the general philosophy involved in the construction of the language. But this is not the place to present to the child arbitrary models for practice, nor to exercise him in the employment of recognized forms of good usage to the end that they may become habitual. This belongs no more to the grammar class than it does to every school exercise in which language is used. Speaking of this matter, Prof. John Mulligan says, in the preface to his "Exposition of the Grammatical Structure of the English Language," that

"the importance of a thorough reformation of the method of teaching grammar to the general intellectual progress of the age, can scarcely be overestimated. We may form some notion of this importance if we reflect that this science not only lays (or, at least, should lay) the foundation of all sound logic and all true eloquence — has the closest connection with correct thinking as well as with the correct transmission of the products of thought from mind to mind — but serves as a natural and indispensable introduction to our courses of intellectual training, and the first step in a philosophical education."

Method.

If the view expressed above respecting the nature and function of English grammar is correct, then it fol-

lows that the things for us to study are thought relations and the consequent relations of the words which are used to express the thought. If so much is conceded, then it follows further that the only language element which expresses a thought — the sentence — must be taken as the unit of study. Isolated words cannot be treated grammatically, it matters not whether we are considering the parsing of each word individually (considering the words as *parts of speech*) or the analysis of an entire sentence (considering the words as the *logical elements of the sentence*). Any such matter as “list of prepositions,” “list of irregular verbs,” etc., must be ruled out as being irrational. Every word in the English language may, if used properly, serve as a substantive ; that is, have the force of a noun. It may be well to call attention to the lists of words which are *generally used as prepositions*, or as some other part of speech, but they should not be called prepositions until they become such by being used in a certain manner in a sentence. Finally, if the position taken in the chapter on The Actual Realities in School Subjects is tenable, then we must conclude that the study of English grammar should be based upon language itself and not upon a set of definitions about the language. Definitions must be studied, but it should be only as a means of crystallizing what has been found in studying the language which contains examples of the items to be defined. In his “Lectures on Language and Linguistic Method in the Schools” (p. 73), Professor Laurie says :—

“To be of any utility, either as a discipline, or as training, or as knowledge, grammar and rhetoric have to be studied through

examples. Grammar has to be studied in and through sentences, and to be extracted from sentences by the pupil, if it is to be really taught; and so also rhetoric has to be studied in and through the masterpieces of literature, and extracted from them, if it is to be really taught."

Our first formal study of English grammar must consist, then, in determining the nature of the groups of words which form sentences; this settled, the essential parts of the sentence should claim attention; next, the individual words which comprise these parts should be considered as parts of speech. The *detailed* study of the *logical value of each word* in the sentence should be postponed until the more critical work of exhaustive analysis is begun.

Many writers advise that we begin the work with words, pointing out through their meanings the various parts of speech, and then combine these to form the sentence. They base this recommendation upon the claims (1) that the child begins to speak by using individual words, and that later he employs full sentences; (2) that it is procedure from the particular to the general. Each of these arguments is denied any weight in this connection, the first because it is valueless, and the second because it is untrue.

We may grant that the child, in learning to speak, begins by using a word to express a full thought; but it must be remembered that when he learns to speak he is an infant, and also that when he uses a word to express a full thought he is employing an imperfect instrument. When we begin to teach grammar we have the child in a more developed state, — thought power is developed,

practical language, both in speech and writing, is mastered, and a large fund of varied ideas is possessed.

It seems entirely without point then to argue that, because an infant proceeded in a certain manner in his development, we should follow the same order of procedure with a being as much developed as the average child is when it is right for him to begin to study grammar. As well might we argue that each individual, founding a home for himself in this present age, should model it after the homes of the barbarous nations of antiquity (the infants of the race), and gradually evolve from that a modern home suited to his present advancement, thus ignoring all that he has inherited from the progress of the race.

Neither is there any sufficient reason for using an imperfect instrument of expression as the basis of our study of grammar when we have a perfect one at hand. It is thought that we are to analyze, and this thought can be interpreted only through its expression. If we take an imperfect expression, the thought which we are called upon to analyze must be correspondingly imperfect, unless perchance we may complete it by a happy guess. Attention may be directed to the words in their isolation, their history may be studied, and, by supplying in thought what is not brought forth in expression (the meaning), we may even classify words under the headings known as parts of speech. But it is only when words are in relation to each other that they constitute a language; and, if we are to study the structure of the language, we must have the language before us for study. Isolated words are the materials out of which a language may

be made, but they do not furnish the finished structure.

The second reason for the synthetic mode of procedure in grammar is regarded as baseless because it is untrue. A sentence is not a generalization developed out of a study of words. It is only a larger individual thing made up of pieces which are the words. A word that we may study is a single thing ; likewise a sentence that we may study is a single thing. If we study a word, not in itself, but as a type of its class, we may reach a generalized truth, but it will be about words ; likewise, if we study a sentence, not in itself, but as a type of its kind, we may reach a generalization, but it will be about sentences. We do not proceed from the particular to the general when we study words first and sentences afterwards. We proceed only to more complex particulars ; each one is *this* sentence or *that* sentence, but not sentence in general. Neither is a study of the sentence a study respecting words in general, nor yet of any class of words. It is merely certain individual words (pieces) *and their relations to each other*.

Analysis. The charge is frequently made by teachers of higher English that pupils can often diagram a sentence correctly but they cannot tell what it means. If this is so, then it is highly probable that, in the earlier study of English, pupils have "gone through" a course in oral grammatical analysis which has been made purely formal and mechanical, or else they have neglected even the form of oral analysis and have devoted their strength to guessing how to arrange lines in a symmetrical form and to write the words of a sentence upon them — perfunctory diagramming.

It is conceded that the usual form of grammatical analysis, if it is done thoughtfully, has great value for mental discipline as well as for revealing the significance of language. It is also conceded that the written diagram, so much abused in many sections, may have great value if used with discretion. It must not be regarded as a *substitute* for analysis, as many pupils view it, but as a *form* of analysis. It is simply a scheme of shorthand for the purpose of picturing the relations of the parts of a thought, and for indicating in a few minutes what it would take hours to write in the language usually employed in oral analysis. When a pupil declares that he can diagram a sentence but that he cannot analyze it, the mistake lies in his incorrect use of the word, analyze. To him the term "analyze" means to *say*, as he has heard others say, all that he knows about the relations of the several words of a sentence. This he is unable to do, because he does not remember what he thinks is the necessary order in which others have said the different things, and because he has forgotten some of the technical terms which they use. But, if he can *think* the relations of the several parts, so as to make his diagramming anything but happy guessing, he thereby does the analyzing, and the diagram is only the written form of such analysis.

Hence no objection will be raised in these pages against the usual forms of grammatical analysis (including diagramming), and they are even recommended. Not only so, but the very earliest grammatical treatment of the sentence should be a process of analysis in which the larger elements (subject and predicate) are pointed out,

and this should be followed by a study of the connecting and modifying elements. When these parts are learned in their relation to each other, the more exhaustive study of individual words (parsing) should be begun. But while these are recommended, they will not be further discussed here, because every teacher of grammar is expected to know them, or can learn them from textbooks on the subject.

It is to another form of analysis, the analysis of meaning rather than of expression, that attention will be directed here. The aim is to direct the learner's mind to ideas rather than to terms, and for this purpose the teacher should use language which will keep his attention upon the thought, and not merely upon its expression. Just as it is more rational for the student of grammar to analyze language itself, and thus reach the definitions about language, rather than to study the definitions first and then test them in language; so it is best, for his mastery of the subject and for his mental discipline, to have his attention directed first to the significance, and afterwards to the sign, in language.

1. Analysis of meaning in *isolated sentences*. If we take the sentence, "The bright flowers of the morning-glory climbed over the garden wall," we may illustrate this method of analysis by the use of the following questions:

"What is here talked about?" "The bright flowers of the morning-glory."

"What is said concerning them?" "They climbed over the garden wall."

Now, since this subject idea (the idea that is being

thought or talked about) is complex, it may be further analyzed.

"In a single word tell what is talked about." "Flowers." "What kind of flowers?" "The bright ones." "*All* bright ones?" "No, only those of the morning-glory."

Similarly we may treat the predicate idea. "What is it that these flowers did?" "Climbed." "Where did they climb?" "Over the garden wall."

By such a method of analysis teachers may not be able to get the class to "dispose of" many sentences at a recitation, but they cannot easily fail to get them to understand the meanings of sentences better than they usually do. Besides, since this process calls the child's attention to the thought itself and to the relations of the several parts of the thought to each other, it cannot well help increasing his reasoning power.

If suitable sentences are selected, it may readily be shown that all our thoughts (the meanings which are expressed by declarative sentences) are analyzable into the following ideas:—

Subject ideas, predicate ideas, modifying ideas, connecting ideas.

When the learner is directed, in his study, to the analysis of the language rather than of the meaning alone which is presented to him, he will find that to these different ideas there corresponds the usual grammatical terms. For subject idea there will be substituted the subject words of the sentence, or simply "the subject." For predicate idea there will be substituted "the predicate." This will be found at times to consist

of a verb only ; at other times it will be seen to be complex, composed of either a predicate adjective or a predicate noun (either one or many words), together with a copula (usually some form of the verb "be" which simply couples together two words in the relation of a subject and a predicate). Modifying ideas will be found to correspond to the words which modify either the subject, the predicate, or some other modifier, and are called "modifiers." Connecting ideas will give way to some one of the terms, "connective," "relation word," or "copula."

It is evident that any method of grammatical analysis which is rationally done must take into account these thought elements, for the words get their grammatical relations to each other only by virtue of their related meanings. But it seems equally true that the stereotyped processes, observable in many grammar classes, do nothing to require the directing of the learner's thought to anything beyond words. The merit that is claimed for the above mode of procedure lies in the fact that it makes the language itself, with its significance, the subject of study, for it may precede the learning of any formal definitions from a text-book in grammar ; or, if it is done after the definitions are known, it still directs the learner's thought to the reality in grammar and away from the text-book statements about such reality.

If thorough drill is given in such a form of analysis, it will be found that the learner cannot turn to the usual processes and terms of grammatical analysis *without having them become significant at once and for all time*. When such emphasis as this is not placed upon

sentence meanings, we run the same risk of having the learner's grammatical analysis become mechanical and devoid of thought that we do in the process of committing and reciting the multiplication table when its meaning has not first been presented. Whoever is taught to commit tables of results, formulas, or definitions in the old memoriter fashion, does it at the expense of his mental development ; while, to the one who has had the significance of these things first presented, the committing of the excellent form in which they are expressed becomes both an intelligent act and a great aid.

2. Comparative study of *related sentences*. If the study of grammar is to fulfill its mission as a means of giving the learner a mastery of the structure of language, and of equipping him to interpret language, then there is one other form of study to which attention must be given. Thought as expressed in language is usually continuous. The sentences employed express *related* truths. The meaning of the sentence may be grasped, while the relation of its meaning to that of another may not be at all understood. Provision should therefore be made to educate children in this most important part of the mastery of language, and the grammar class should afford an especial opportunity for such training. Even when the analysis of sentences follows the plan usually observed by teachers, the sentences should be related ones. In "How to Parse," Rev. Edwin A. Abbott says : —

" A pupil cannot be regarded as thoroughly tested in his knowledge of grammatical rules till he has applied them to *connected* narrative. As long as he is tested in nothing but short sentences,

you can never feel sure that his accuracy is not merely mechanical."

But in addition to this, the value of comparative study will be further enhanced by observing the recommendations which follow.

The teacher who has even a slight acquaintance with the elements of deductive logic, will understand the work that is here recommended. For those who do not possess such knowledge, a brief treatment with a few illustrations will reveal what is intended. It has already been pointed out (p. 58) that all the regular forms of declarative sentences are reducible to four classes, illustrated by the following sentences, and called by the names of the letters which accompany them:—

(*A*) All knowledge is useful.

(*E*) No knowledge is useful.

(*I*) Some knowledge is useful.

(*O*) Some knowledge is not useful.

The distinctive character of these sentences does not lie in the information which they convey, but in the form of the sentence. The words in them which are especially important for the purpose of a comparative study are:—

(*A*) All is (or, are) . . .

(*E*) No (none) . . is (or, are) . . .

(*I*) Some is (or, are) . . .

(*O*) Some is not (or, are not) . . .

Examination will reveal the fact that in *A* and *E* the term which forms the subject (in this case, knowledge)

is considered in its entirety, or is distributed. The whole of the subject idea is spoken of in the propositions. In *I* and *O*, the term which forms the subject is considered only in part. In the above sentences, this fact is revealed by the use of the word "some." Any other word which signifies "less than all," will serve as well as the word "some." Frequently there will be no modifying word in the subject of the sentence by means of which the learner can tell whether the meaning is "some" or "all" of the subject, as, "The Chinese are industrious." Under such conditions it is necessary to decide from the meaning alone, whether the subject is distributed or undistributed.

In the four typical sentences (*A*, *E*, *I*, *O*), the ones which distribute their subjects (*A* and *E*) are called *universal propositions*. The ones which do not distribute their subjects (*I* and *O*) are called *particular propositions*.

Examining the predicates of the four propositions, we find that two of them (*A* and *I*) are affirmative and two (*E* and *O*) are negative.

When the assertion is made that all knowledge is useful, there is clearly nothing in that to exclude other things from being useful at the same time. So also with the other affirmative proposition, some knowledge is useful. In neither case do we refer to all that is included in the meaning of the predicate term. This being so, the predicates of affirmative propositions (*A* and *I*) are said to be undistributed. But in the statement, No knowledge is useful, I find that, if examination is made of the entire circle of useful things, knowledge will nowhere be found in it. Since examination must

thus be made of the entire meaning of the term before we can assert that no knowledge is useful, we see that the predicate of *E* is distributed. Similarly the subject term of *O* ("knowledge," as limited by "some" — some knowledge) is excluded from the entire predicate, useful. In this case also the predicate is said to be distributed, since it must be examined in its entirety in order to establish the claim that "some knowledge" is not included in any part of "useful (things)."

Summing up our examination of both the subjects and the predicates of the four propositions, we may state the results in the following form : —

PROPOSITIONS.	LETTER NAME.	KIND.	SUBJECT.	PREDICATE.
	A.	Universal Affirmative.	Distributed.	Undistributed.
	E.	Universal Negative.	Distributed.	Distributed.
	I.	Particular Affirmative.	Undistributed.	Undistributed.
	O.	Particular Negative.	Undistributed.	Distributed.

This brief introduction to the nature of the pure forms of logical propositions is made in order that we may reveal to the learner one of the problems for him to solve in this comparative study of sentences. It is very evident that when I make a truthful assertion respecting *all* of a given class (when the individuals are not considered in their *collective* capacity), my statement is also true of *some* (any number less than all) of that class ; on the other hand, if I make a true statement respecting a part of a class, such assertion may or may not be true, if made of the entire class. This then is our problem ;

If *A* is true, what of the truth of the other three (*E, I, O*)?

If *E* is true, what of the truth of the other three (*A, I, O*)?

If *I* is true, what of the truth of the other three (*A, E, O*)?

If *O* is true, what of the truth of the other three (*A, E, I*)?

If *A* is false, what of the truth of the other three (*E, I, O*)?

If *E* is false, what of the truth of the other three (*A, I, O*)?

If *I* is false, what of the truth of the other three (*A, E, O*)?

If *O* is false, what of the truth of the other three (*A, E, I*)?

These relations should be illustrated and tested in many different sentences (always bearing in mind that the sentences to be compared must have in them the same subject terms and also the same predicate terms); they should then be impressed by frequent repetition, so that the learner can speak of the relative truths of *A, E, I*, and *O* without the necessity of thinking of them by aid of concrete sentences. Such an exercise will have almost unlimited value as an aid to the interpretation of connected discourse.

Another important line of comparative study of sentences is the following:—

Given the sentence, "All men are mortal."

If this is true, it follows of necessity that—

No men are immortal; and that—

Some mortals are men.

Given —

No men are perfect. (E)

Some men are wise. (I)

Some men are not wise. (O)

Tell what truths follow by immediate inference from each of these.

Still another exercise, which the teacher can vary at pleasure by using other thoughts as the base, will be given.

Take the sentences —

- (1) All wise men are just men.
- (2) No just men are unwise.
- (3) All unjust men are wise.
- (4) All just men are wise.
- (5) No wise men are unjust.
- (6) No unwise men are just.
- (7) No unwise men are unjust.
- (8) No just men are wise.
- (9) Some wise men are just.
- (10) Some unwise men are just.
- (11) Some unwise men are unjust.
- (12) Some wise men are unjust.
- (13) No wise men are just.
- (14) Some just men are unwise.
- (15) Some just men are wise.
- (16) All wise men are unjust.
- (17) All unwise men are unjust.
- (18) All unwise men are just.
- (19) All just men are unwise.
- (20) All unjust men are unwise, etc.

Tell —

- (a) The ones that can be inferred from (I).
- (b) The ones from which (I) can be inferred.
- (c) The ones that contradict (I).
- (d) The ones that do not contradict (I), but which cannot be inferred from (I).

Besides the introduction of entirely different thoughts, we may take any one of the above sentences as the base of comparison, and may thus give an almost endless range to the work.

Finally, we may call attention to some of the irregularities and errors that have crept into our thought and expression.

The sentence "All men are not happy," which is a very common form of expression, is often interpreted to mean "All men are unhappy," whereas it really means "Not all men are happy," or, "Some men are not happy" (O).

In the sentence "Few men are both rich and generous," we have an illustration of another form of expression that is subject to ambiguity. It seems, from its form, to be (I), — "A few men," etc.; but what is intended is to impress the belief that "most men are *not* both rich and generous" (O).

Even the word "some" is liable to misinterpretation. If we assert that "some men are happy," there are those who will instantly import into it two other ideas, and insist that our sentence gave warrant for both. They declare that we imply that "some men are not happy," and also that we deny that "all men are happy." They read it as *some, but not all*. It means *some at least*,

it may be all. About those not included in the word some, we make no assertion whatever, because we do not presume to know.

All of this emphasizes the thought that we must constantly interpret sentences by reference to their context — a matter upon which it is impossible to place too strong emphasis.

Parsing. It is not the ancient stereotyped method of parsing which is here recommended, but rather a method which follows naturally from the use we have thus far made of the sentence, and which simply extends the process of analysis which we have given to the sentence on down to the individual words that are in sentences. To parse a word is thus to give a complete account of it, as it stands in the sentence. The analysis of a sentence consists simply in setting forth the offices of the several words which enter into its construction; parsing includes this item of construction (or office) among the things to which attention is directed.

In order, therefore, that parsing may not cause us to throw aside all the valuable product gained by analysis, we must see to it that the learner does not regard parsing as a totally new process performed upon words. A common error consists in regarding analysis as a method of disposing of sentences, and parsing as a method of disposing of words. From this it is an easy step to the next error of regarding parsing as a process performed upon *isolated* words. In truth it is simply an extension of the process of analysis into further details of the sentence; namely, the elements of the words which form the sentence.

To accomplish all that is here implied, and to prevent the parsing exercises from becoming a thoughtless round of guesses and blunders, the following directions are given :—

1. In a sentence to be parsed, the first thing to do is to point out the bare subject and the bare predicate. Then let these words, the subject first and the predicate afterwards, be parsed.

2. In disposing of the rest of the words in the complete subject (and afterwards in the complete predicate), “A word qualified by any other is to be parsed before that other.” This is particularly valuable because it emphasizes, through the order of procedure, the relations of the thought elements in the sentence.

Illustration — My brother's friend laid the package in William's room. In this sentence the words should be parsed in the following order: friend, brother's, my, laid, package, the, room, William's, in. By so doing the parsing exercise virtually keeps up all that was valuable in the earlier analysis.

3. Having determined the best order in which to parse the words of a sentence, so that we may get from the exercise the most thorough mastery of the thought relations, we must consider next the treatment to be given the individual words. At the outset each word should be parsed fully; that is, have every detail given about the word, *with the reason for everything that is given*.

Illustration — *Friend* (taken from the sentence above) is a noun because it is the name of a person; a common noun because it applies to each of the individuals of a class; it is not a gender noun because it does not imply

a distinction of sex; it is a simple noun because it cannot be resolved into any English elements; singular number because it means only one of its class (the inflection is: friend, friend's, friends, friends'); it is in the nominative case because it is the subject of the verb laid.

4. After such exhaustive parsing has been kept up till pupils are accustomed to thinking the reasons for all the views they express, the work should be shortened. This may be done by omitting the reasons (*excepting when pupils give evidence of guessing*). Another brief form consists in stating only matters of importance, which are determined by the teacher's questions. Instead of repeating the entire round of number, person, gender, case, etc., when certain of them are very evident in the words that are being treated, only one, or a few, of the properties may be given attention.

False Syntax. In the use of examples of false, or improper, syntax, the purpose is twofold: (1) we should use it as a means of testing and applying the child's knowledge of the laws of syntax, and (2) we should aim to make the learner conscious of the defects in his own speech.

Many times when a law is stated and followed by an illustration, the illustration as a whole is remembered by the child, but the especial point of significance is missed. This error may be avoided either by having the learner supply an omission in the incomplete sentence which is offered (such omission requiring attention to the point at issue), or by having him correct a mistaken form which is presented, and give the reasons for the correction.

Again, it is often true that a child who can parse and analyze all ordinary sentences, and who can correct the examples of false syntax presented in his book, will yet violate in his speech many of the laws which he must know in order to do intelligent parsing, analyzing, or correcting. There seems to be no rational explanation for such a condition, excepting that he has become *habituated* to the use of certain incorrect forms, which he merely fails to test by the known rules, or else does not know that he uses them. Since he has become partial master of the laws of construction, the one thing needful is to force upon his notice his own forms of speech. At this stage of the work we have entered upon the field of practical composition. The only difference between this work and that of our earlier language lessons is that now the learner can understand the reasons for the forms that are required of him and need no longer be given arbitrary models. If our work in false syntax is to fulfill its second mission, however, it must be accomplished by employing the method of the language class (practice); and, in connection with this, we may accomplish the first of our aims by assigning reasons for all the constructions that are allowed.

As a rule it will be found unnecessary to manufacture false forms for the grammar class. Much can be accomplished by having pupils supply ellipses; and where this is not sufficient for the purpose, the expressions of the children and the community will supply all the types of error to which their attention should be called.

An objection that is sometimes urged against the use of false syntax, is that one might as well present a case

of false spelling with a view to having a child learn to spell correctly as to present false grammatical constructions with a view to having him thereby learn to make correct sentences. This objection seems unfounded, because in the case of spelling there usually is no reason why one form is correct and another form incorrect, while in syntax there always is a sufficient reason, and one which the child understands when he is prepared for the exercises in false syntax. However, since it is not our aim to find what mistaken combinations a child is able to correct, but rather to use actual language as a means of impressing upon him more surely the structure of language, we recommend going to the school and the community for our examples, rather than manufacturing them for the occasion.

Historical Study of English Grammar. Finally, nothing else can so completely round out a learner's knowledge of the structure of the English language as a historical study of the language. Besides enlarging his grasp of the subject, nothing else can so effectually fill the learner with the idea that grammar is a living, growing thing, and thus awaken his interest in it, which can never be aroused by the dull, monotonous sorting over dry bones in parsing, analysis, etc. It is the opinion of so eminent an authority as J. M. D. Meiklejohn that —

“the study of English grammar is becoming every day more and more historical — and necessarily so. There are scores of inflections, usages, constructions, idioms, which cannot be truly or adequately explained without a reference to the past states of the language — to a time when it was a synthetic or inflected language, like German or Latin.”

It is not an aim of this work, however, to do more than recommend the plan to teachers and direct them to the sources of knowledge which they need. For the historical method the following works should be consulted by the teacher: "History of the English Language," by T. R. Lounsbury; "The English Language," by J. M. D. Meiklejohn; "The Philology of the English Tongue," by John Earle; and "Historical Outlines of English Accidence," by Morris.

It is also strongly recommended that, no matter what text-book his classes use, the teacher should have for personal reference such works as "How to Parse," by E. A. Abbott; "Essentials of English Grammar," by William Dwight Whitney; and "Grammatical Structure of the English Language," by John Mulligan.

CHAPTER XVI.

SPELLING.

SPELLING is a branch in the learning of which there is no set of mental movements to be considered. Investigation plays no important part in it and generalizations are practically valueless. It is true that there are a few rules of spelling, and they may even be of value at times ; but the exceptions are so numerous and the rules themselves so little needed that they can scarcely be regarded as worth the effort it costs to learn them. The subject merely presents a large set of items which are to be impressed upon the learner's being. It is commonly said that spelling presents words to be committed to memory ; but as this is usually understood, it seems to be unsatisfactory. To make spelling practically valuable, one's writing arm must be so habituated to producing the words that, as soon as the word is thought, its execution will follow without minute direction being given to the hand.

But if spelling will not submit to the methodical treatment of other subjects, it is nevertheless very important. To be a good speller may not win for one any special mark of distinction, but to be a poor speller will often bring upon one the odium which attaches to ignorance. It is a subject which all who have had opportunities are expected to know, and which it is somewhat of a disgrace not to know.

During the first two years of school life, the child's original learning of new words will take place almost exclusively in the recitation ; his seat work will be for the purpose of impressing more firmly what he has acquired. At the beginning of this period it will be found valuable to *have all his spelling done in full sentences*. (Of course, no oral spelling will be undertaken until after the child has mastered the letter names in his reading class.) The advantages in teaching spelling by the use of full sentences are numerous. It keeps before the learner's mind all that he has learned in reading ; it prepares him immediately to write what he speaks ; and it makes the learning of spelling an intelligent and rapid process.

After such work in the spelling class has been kept up until the child can spell correctly at least one hundred of the words he speaks and reads, isolated words may be taken. These should be put into groups containing similar letter elements, just as the words are massed for phonic analysis in the reading class. Such a plan enables the teacher to call especial attention to the differences in similar words, and it makes a single learning of the similar parts serve for the mastery of many words.

Illustration — at, cat, bat, sat, rat, fat, flat, hat, mat, vat.

Later, when the unity of word forms is no longer necessary as an aid to learning, the words may be taken from the ordinary spelling book, though at all times the words one uses in speech should be the ones most carefully attended to in spelling.

When the child has advanced in his spelling to the point where he can study the lesson in preparation for the recitation, the teacher's work in the class will be confined to testing and stimulating him, and to *directing him in the proper methods of study*. It is more thoroughly true of spelling than of any other branch in the curriculum that, if value is to come from the work at this stage, it must come from the child's method of study, and not from the recitation. However, it is possible to employ a method of testing which will not reveal the child's grasp of spelling at the times when he needs to spell, — while he is writing in connected discourse. To guard against this error, much of the spelling should be done as dictation exercises. This will necessitate the use of the written method of recitation. When isolated words are given for spelling it makes but little difference whether the recitation is oral or written ; the way in which the child studies the lesson is the important consideration. As a matter of expediency, the oral and written plans should both be used in the recitation, because greater variety and attractiveness can thus be given to the subject, and, as a consequence, the learner's interest in it be greatly stimulated.

All words misspelled in the recitation should be kept for stated review. If this is not done, the value of the test is greatly reduced. Indeed, it seems to be almost a waste of time. The child needs his attention directed in a special manner to the words he cannot spell. If these are dropped when the lesson is ended, the probability is they will not soon be learned. But if only these words are brought up for the stated review, this

will direct the child's effort to the place where it is most needed.

Plans for Studying Spelling.

All the plans for studying spelling may be arranged in two groups, — those which impress form and those which impress sound. The process that is best for one child to employ in learning to spell may not be the process best suited to another child. If a learner is decidedly ear-minded, he can doubtless learn a spelling lesson best by saying it aloud ; if he is decidedly eye-minded, writing will be the best means of learning to spell. Accordingly the following plans are recommended : —

1. Have children study the spelling lesson by *thoughtfully writing* the words. This is better than simply looking at the words, even for an eye-minded child, because it makes use of his motor side as an aid in impressing the form.

2. Have children *say aloud* the names of the letters which form a word. To prevent the confusion which would result from the use of such a plan in the school-room, have children study the spelling lessons at home.

3. Teach children to look over each new spelling lesson when they begin to study it, and to *strike out the words they are sure they can spell*. This plan will save the child from wasting his energies, and it will enable him to repeat the unknown words more frequently, thus employing his energies where they will give the largest return.

4. Whether a child studies the lesson by writing it or

by saying it, impress upon him the importance of *giving his undivided attention to the work at hand*. In the study of spelling (a subject that appeals to the arbitrary memory) this direction is more important than in the study of a subject which appeals to the reason. In the latter, thought is the dominant activity, and the learner can recover himself when he finds that his mind is wandering. But in spelling, the repetition is liable to become purely mechanical, and the learner believes himself to be really studying, provided only that he is active. Mind wandering is to be deplored at all times, but it is peculiarly disastrous in the study of a subject which is to be impressed in its integrity upon the memory.

5. Arrange the school programme so that the study of spelling shall not come at a time when the child is greatly wearied. If he studies at home, explain to him the unwisdom of endeavoring to study spelling (or any other arbitrary memory subject) when he is worn out with other study. Remember that the arbitrary memory is the first faculty to feel the disastrous effects of excessive weariness. No study should be continued after the point of extreme fatigue is reached, and this is peculiarly true of anything that is addressed to the memory alone.

CHAPTER XVII.

HISTORY.

OF all the subjects in the curriculum none is better suited than history to arouse in the learner a natural and enthusiastic interest. Its portrayal of the doings of men, — their brave deeds, great achievements, heroic virtues, and lives of devotion to principle, — while sometimes interrupted by the record of vice even in high places, is admirably adapted to awaken within the youthful mind the desire for a nobler life and for an intimate acquaintance with the great and the good of all ages. Yet, notwithstanding all these possibilities of the subject, it is often presented in such a manner as to fill the child with disgust for it, and to impress upon him the idea that it is simply a set of lifeless statements about impersonal events. This result must be due chiefly to the method of presentation, for there is nothing in the nature of the subject which would produce it, neither can it be accounted for by any lack of interest on the part of the child in the items of which history treats. Much can be done, therefore, to prevent such an outcome if teachers get their minds right with respect to the nature of the subject, the ends to be aimed at in its presentation, and the consequent methods of teaching it.

Since it is with man that the student of history is especially concerned,^f he should be prepared for such study by being made acquainted with men, at a time

when he is not yet mature enough to understand the actions of communities. Accordingly, the years of school life which precede his introduction to formal history should furnish him many opportunities to learn biography and striking incidents not chronologically arranged. Since history is teeming with incidents "stranger than fiction," there is perhaps no longing of the human heart which cannot be illustrated by incidents taken from its pages, and no thirst for the weird and wonderful that cannot be satisfied here as well as from the pages of fiction. This is not meant as a recommendation to dispense with the use of the purely imaginative in literature, and to confine the child to the cold matter-of-fact; but it is meant to remind teachers of the wonderful fertility of the field of history.

For this early portion of school life, the biographies presented should deal largely with the youth of the characters studied, in order that we may arouse the learner's interest in their lives. The child, in his immaturity and inexperience, can be interested in the exploits of children when, because of its meaninglessness, he will not be moved by a recital of the achievements of great men. Consequently the boyhood days of eminent men should be used as a means of leading the learner to understand and appreciate their later developments in character and accomplishment. The boyhood days of Lincoln in his home of poverty and amidst his scenes of busy industry; the tow-path experiences of Garfield; the apprenticeship of Franklin in his brother's printing office and his later adventures in getting established in business; the brave deeds of the boy Farragut, made a

midshipman at the age of ten — all these, and many others, will reveal more of human character and of the possibilities of human life to the child than can ever be impressed by the study of what he finds recorded in the ordinary school history. The one common element running through such lives, which has given to them their breadth and stability, is the element of persevering industry, the struggle for self-improvement, which often caused them to sacrifice their meals by day and their rest by night. Such lives reveal the presence of an immense faith in human endeavor, for it is a notable fact that the majority of men who have become famous could say, as did Henry Clay, "The only things I inherited were ignorance and indigence."

Furthermore, the private deeds of men whose brilliant services adorn the pages of history will appeal more strongly to the young than their finest victories upon the field of battle or in the halls of legislation. King Alfred's experiences with the burning cakes a child can understand, when he will know nothing of treaty making or the expansion of empires. Washington's fair but exacting treatment of the miserly ferry passenger will reveal to children a trait in his character that was influential in making him the wise councilor and efficient leader that he was; Robert Bruce's experience with the persevering spider may serve to inflame many a young life with a holy zeal, when even an extended study of persistent industry or unswerving fortitude in a domain foreign to the child's experience could have no appreciable influence. Such things will reveal more truly the inner character of the man than will his public deeds;

and at this stage of the work a true insight into the character of men is of more vital moment to the child than a knowledge of their political achievements.

When striking events are presented to the child at this stage of his advancement, they should be chosen with especial reference to his dominant interests. The language class, reading class, and all other opportunities for increasing the learner's store of general information, will furnish the occasions for awakening, directing, and stimulating his interests, and at the same time for impressing upon him the facts which will serve later to illumine the pages of history. The items referred to now are not single deeds which cluster about a name better known than the deeds themselves, but rather, events in the march of time which, in the minds of most men, stand out boldly, and often have no name of an actor associated with them. The invention of printing, of gunpowder, of the cotton gin; the laying of the Atlantic cable, and the construction of the first telegraph line; the running of the first train of steam cars; the building of the Mississippi River jetties, of the Brooklyn Bridge, of the Niagara suspension bridge; and many other less familiar, but no less interesting, ones will serve as illustrations.

But though it is wise and important to present biography and scattered incident during the early school days, before the child is able to take the sterner study of history, we must not make the mistake of thinking that this is history. "History is a methodical record of the important events which concern a *community of men*, usually so arranged as to show the connection of causes

and effects." It is a "statement of the progress of a nation or an institution, with *philosophical inquiries respecting effects and causes.*"

These are two important items for every teacher of history to keep clearly before his mind — the community life of men, and the relations of the several historic events to each other. Man in society is a different creature from a man in isolation. His best physical, intellectual, or ethical development requires that he should live in touch with others. He is a social being, and as an individual he is no more the unit of study in history than a twig is the unit of study in trees. Each man is so dependent upon others that a single biography is but an element arbitrarily abstracted from the full current of history. All men are so bound together in their life of mutual dependence, that no one life can be understood unless it is studied as influenced by its environment. It is only as he is duly impressed with this important truth, that the learner will ever come to have any better conception of history than that it is a record of the deeds of a certain discoverer, king, general, or statesman. The really vital part in the world's progress, the advance of mankind, will entirely escape his notice because of the luster which attaches to a few of the leading lights along the way.

Even when this item is clear to the minds of both teacher and pupil, the full significance of the historic record is not exhausted. It is further necessary that the various items should be seen in their proper setting. To this end, a simple chronological order, or record of events which conforms to the time order of their occur-

rence as its distinctive feature, is not enough. Events must be so massed and presented as to bring out into bold relief their logical relations of cause and effect, interdependence, etc.

This suggests the importance of making a clear distinction between the two elements of historic study, — historic facts and the philosophy of history. Corresponding to this twofold division of the subject, we must note the two stages in the method of presentation, — that which offers items of historic fact (the individual notions of history) to be impressed upon the memory ; and that which strives to build up the great historic concepts, or general notions, which in their turn can serve as guides to an understanding of present and future social needs and of the requirements of national prosperity. This distinction must not be confused with that which was drawn between biography and scattered events of interest on the one hand, and history on the other. Such fragmentary elements constitute only the introduction, and occasional side lights, to the great course of history proper. In that course, however, we must discriminate between the facts, which, when apprehended as facts, can be addressed only to the memory ; and the philosophy, which is addressed to the reason of the child and is made possible only upon a basis of solid facts.

It is not to be thought that these two phases of historic study should be kept distinct in time and that one of them should be completed before the other is begun. The philosophic aspect is undoubtedly the goal to be aimed at, but the study of facts can never end so long as history continues to be made ; and questions of mo-

tive, cause, importance, and other opinions should be asked in all stages of the work, provided only that they are kept within the child's range of mental development and historic information.

It is important to remember, however, that when facts are being presented we must employ a method of teaching that is very different in its character from the method to be used when historic concepts are being developed. Furthermore, it is well to remember that the predominating element to receive attention in the early part of the course is historic fact, and that this predominance only gradually grows proportionately less as we advance up the grades. The matter of first importance at all stages of the work is, that the child shall *know*; then it is possible for him to indulge wisely in *judgments and opinions* which become worthy of expression, because they are the outcome of a full mind.

Historic Facts.

The plan so prevalent in the schools, of learning historic facts in masses of five or six pages at a lesson, is positively pernicious. It is destructive of all unity, and it thereby overburdens the arbitrary memory and lessens the probability that the child will apprehend the relations of the facts to each other. Failing in this last, he must necessarily fail to comprehend and appreciate history. This plan is still further objectionable because, in addition to offering the child a historic report which is without coherency, it is generally given to him from the very beginning of his study of history, thus impressing upon him the idea that the actual matter under consideration in

this branch of study is that which is contained in a book. What we should aim at in teaching history is to impress the child with the idea that he is now learning about *communities of men in action*, and that he can understand these only as he sees them *in their proper relations to each other*. The above plan of procedure fails in both of these particulars.

To direct the learner's thought to the actual reality in history (the actions of society, or men, in relation to each other), we should use the events which are transpiring about him. The subject can thus be made of vital interest, if we will use the national celebrations in which the child actually participates, and, with these as a basis, discuss their meaning, what brought them about, what fixed their time, and all other matters which grow naturally out of them. In the same manner we can use the actual doings of the government as revealed in its post-offices, its mints, national and state elections, the courts, the newspaper reports of legislation, etc.

The aim in all this is to prevent the child from starting upon the study of history with the mistaken impression that it is a lot of statements to be found in a certain book ; or, if his error is not so glaring as that, to prevent him from thinking that it has to do only with the remote past, with things that are completed and whose effects are spent, and that it has no connection with the present.

Having had his attention directed to the events in the midst of which he lives, and about which he can see that there clusters great interest for all earnest men, he will be prepared to use the book in history as the means of learning how the people of the past lived and acted,

and thus brought about the present state of society of which he forms a part. Not only should the child's attention be called to national events as they transpire, for the purpose of *introducing* him to the study of history ; but at all stages of advancement in the work, his mind should be kept upon the actual reality of the subject by means of such events.

As suggestive of the fertile field open to the teacher of history who employs such realities, we may mention, in addition to those already given, the following : presidential messages, tariff revisions, reprints of ancient manuscripts, such as the Declaration of Independence, various treaties, official letters, epoch-making speeches, court decisions, convention reports, or books. Such items should be introduced in their proper places, so that they may add to the bare report of the text-book all that is required to make it significant and intelligible.

With the learner's attention wisely directed to the realities of history, our next problem is to determine how we can present historic items so that their proper relations may be apprehended and they may be understood. It seems clear that in history, as elsewhere, if the learner is to deal with the relations of things, the things must be presented to him in relations. This can be done by presenting historic items in complete epochs and having these analyzed. Individual facts can thus be viewed in the light of the larger enterprises of which they form the parts. Only by giving to the child such an outlook as this can we hope to have him rationally organize his items of information. Disorganization among the items of his knowledge must result in lack of comprehension

and in an inability to remember. As B. A. Hinsdale says :—

“ Too much stress cannot be placed on organization as essential to real knowledge. But, further, it is as necessary to its retention as to its acquirement. . . . Individual events compose a series of events ; but to understand the events singly, it is as necessary to have a knowledge of the series as it is to have a knowledge of the individual facts in order to understand the series. All organized knowledge begins with learning a certain number of facts and truths ; and these must not be limited in their range, but comprehensive. . . . A man at any particular period of his career — as Cromwell, when he became Lord Protector, Napoleon, when he assumed the imperial crown, or Lincoln, when he was inaugurated President — is an absolute enigma, cut off from his own previous life and the life of his country.”

Speaking further upon the subject of historical study, he says :—

“ The great advantage of the period (epoch) is, that the term does not connote a fixed length of time, like year, decade, or century. Some periods are long, some short. It is rarely possible to tell in years how long a period is ; still it has a beginning and an end, and is marked by certain features giving it a unity that makes it possible for the mind to grasp it as a whole. These features may be religious, political, or military, or a blending of various elements. The Protestant Reformation was a political, a national, an intellectual, and an economical movement as well as a religious one. Obviously, therefore, the conception of the period is essential to the right interpretation of history.”

In illustration of this analytic method of treating history by epochs, the following is offered :—

(This treatment, and the outline which follows, are

supplied by my former colleague, Prof. Smith Burnham, Professor of History in the State Normal School at West Chester, Pa.)

The Period of Colonization in American History.

I. Time, 1600–1688 (or, in general, the seventeenth century). The French and the English colonized North America. (The student has already noted that the sixteenth century was the period of Spanish exploration, conquest, and colonization in the West Indies, Mexico, Central and South America. He has been taught that the Spaniards thirsted for adventure, conquest, and wealth; that they were actuated to some extent by religious zeal; but that on the whole their aims were sordid, their commercial policy exclusive, their morals lax, their treatment of the natives cruel, and that they showed a tendency to descend in the scale of civilization.)

II. Place, including a brief study of physiography and its influence on historical development.

The Atlantic seaboard, the valley of the St. Lawrence, and the country about the Great Lakes were the regions first occupied by Europeans. Note that the seaboard is broad and inviting, abounds in good harbors, has numerous rivers by means of which the land can be explored for long distances from the coast; that the St. Lawrence and the Great Lakes furnished the Frenchman a highway into the heart of the continent; that easy portages then took him to the tributaries of the Mississippi; that the Hudson and Lakes George and

Champlain form the natural highway from Canada south to the ocean; that the sources of the Potomac and other southern rivers are hard by the head waters of the tributaries of the Ohio and the Mississippi. Consider the varying aspects of the Atlantic border. In New England the coast is narrow, harbors are abundant, short and rapid rivers furnish excellent water power; while in the South, the long, broad, slowly flowing rivers serve as roads to the large, isolated plantations strung along their banks. The Hudson and the Potomac lead far inland, are paths to the waterways of the interior, and divide the Atlantic slope into three divisions within which grew up three distinct groups of colonies. Show the varieties of soil and climate, the forest character of the country, and the abundance of fur-bearing animals in Canada and the interior.

III. The Colonizing PEOPLES and Their MOTIVES.

1. The *French* occupied the valley of the St. Lawrence and rapidly penetrated the interior. Their motives were commercial and religious. The fur trader and the missionary were the typical French Americans. Few in number, the French were hampered by the effort to introduce the social, political, and ecclesiastical system of France. An eminent authority says: "Paternalism, centralization and bureaucratic government, official rottenness, instability of system, religious exclusiveness, and a vicious system of land tenure were the prime causes of the ruin of New France."

2. The *English* colonized the Atlantic coast from Maine to Georgia. Various motives actuated them.

Some of the more important were the love of adventure ; the desire to better their economic condition, in some cases the desire to rid England of a pauper element ; the commercial spirit, the desire to escape oppressive political and religious conditions ; the hope of founding states in which their own social, political, and religious ideals might be realized. Unlike the French, they suffered little interference from the mother country, and were largely left to work out their own salvation.

IV. Characteristic Differences of Development and Their Causes.

The sharp contrast between the French and English colonies and colonists, and the differences of development noticeable among the thirteen English colonies are directly traceable to certain easily ascertainable causes. Among these causes three stand out prominently.

1. *The historical inheritance, social, political, and religious, which the colonists brought with them.*

(a) The *Frenchman* came with the feudal idea of society, which still prevailed so widely in France. He had been reared under a paternal government which assumed to do everything for the citizen, and consequently tended to weaken his political self-reliance. He was a zealous religionist of the reactionary type, developed by resistance to the spread of Protestantism in Europe. This historical inheritance partly accounts for the feudal character of society in French Canada, for the seignior and his habitants, for the absence of local self-government, and the attempt to control affairs from Paris, and for the religious exclusiveness which prevailed.

(b) The *English*, on the other hand, though recognizing distinct social classes, were free, liberty-loving, self-reliant, individualistic. They had maintained their political rights for centuries against the assaults of baron and king. They had a system of local self-government and common law which, during more than a thousand years of growth, had been becoming a part of the life of the people. Moreover, they had been on the winning side in the sixteenth-century struggle for intellectual and religious liberty. These facts go a long way toward accounting for the striking contrast between the French and the English colonies.

This principle finds further exemplification as we compare the different English colonies. The middle-class Puritan Roundhead of New England, with his peculiar ideals of society and morals, developed social and political institutions of a very different type from those of the aristocratic Episcopalian Cavalier of Virginia, the natural and necessary progenitor of the Southern Chivalry of ante-bellum days. Take for another example the sharp contrasts between the English Quakers, the Dutch, and the Scotch-Irish in colonial Pennsylvania.

2. *The purposes and motives of the colonists as stated above, under III.*

The fur-trading purpose of the Frenchman made him cultivate the friendship of the Indians, led him to explore the interior of the continent, and made him oppose agricultural settlement as likely to destroy the fur-bearing animals. It made the Frenchmen of the lower class trappers and hunters, and led them to live with the Indians and to intermarry with them.

Improper motives account for most of the early failures in colonization. The colonies of Raleigh and the early settlement in Virginia could not succeed so long as a romantic spirit of adventure and a thirst for gold were their guiding stars. Success began when men came to cultivate the soil, to build, to trade, to make homes, to found states.

3. *Environment.*

Physical conditions and surroundings greatly modified development in all the colonies. To take but one example: In Massachusetts, the sterile soil; the short, rapid rivers; the proximity to the sea; the abundance of timber, led many of the people at an early date to turn from farming to fishing, shipbuilding, and trading. These physical conditions, together with the fear of Indian attack, and the fact that the people often came in congregations, led them to settle in towns, partly determined the importance of the church, and was largely accountable for the development of the township system of government, which made possible the fostering of public schools and was so potent a factor in the political education of the people. In Virginia, on the other hand, soil, climate, the many rivers which served as great highways into the interior, the cultivation of tobacco, which found a ready market in England, together with the later introduction of slavery, led the people to live on great plantations, long distances apart. This virtually made township government and public schools an impossibility. It caused the preëminence of the county in government, and combined with other causes to produce the peculiar social life of the South.

Nature decreed that Pennsylvania and Maryland should be agricultural colonies, that the early Dutch settler at Albany should be a fur trader, and that the lowlands of South Carolina should be devoted to the growth of rice and indigo, the last, a fact of mighty import in the history of that colony.

V. Details.

Teach as many as time will permit. Place special stress on biography; on the lives of what may be called the Makers of America. Where time is limited it might be well to select some typical event for detailed study. Thus, a study of King Philip's War would illustrate the character of all Indian wars. The Pennsylvanian might give especial attention to the details of the colonial history of his own state. Note how government, local and general, were developed. Quite as important as a knowledge of details — nay, far more important — is insight into the spirit and thought which underlie and account for the action of the past. This insight is best secured through class-room discussion, and by collateral reading, and topical work. Put in the hands of the pupils the best selections from the standard authors, bits of stirring narrative, apt characterizations and judicious opinions. In this connection make as wide use as possible of original and contemporaneous material. Children are peculiarly susceptible to the epic and dramatic elements in the story of the past. Take advantage of this fact. Let the soul of the pupil thrill with the story of daring deed and heroic achievement, of fortitude in suffering, and intrepidity in danger. Let him read, in the language of

the time, of the wrongs of the people ; let him study the orations which roused them to action ; let him sing the songs which fired their souls in the day of battle. Let him mark the stages in the development of political institutions by a study of the great constitutional documents and state papers. Help him to understand and appreciate the religious, æsthetic, and ethical ideals, and life of the past, by giving him pithy extracts from its great literature. Give him the letters, the diaries, extracts from the laws, records of business transactions, ballads, folk lore, anything and everything that will bring him near to the throbbing life of the people of bygone days.

None of this is meant to teach that the learner is to discard the text-book in history. He should have a good book and should use it with care and exactness. Such a scheme as the above should be clearly outlined in the mind of the teacher ; one main item at a time should be set before the child as a problem to be solved ; with his mind thus definitely directed to an end, he should use his text-book and all other available sources of information to supply the details which will establish the point that is being sought. But, in the use of historic details, the learner *should always have his mind directed to some central element which the more minute data are employed to confirm.* "In history everything depends upon turning narrative into problems." With this point neglected, his efforts must be largely aimless, his knowledge of facts fragmentary, and the endeavor to correlate the history lessons of the several days a failure.

In order that teachers may know where to secure the material necessary for the presentation of the actual realities in history (aside from those furnished incidentally in the newspapers, magazines, etc.), and also the guides for such an analytic presentation as is indicated above, the following are recommended as being especially helpful: "American History told by Contemporaries," by Albert Bushnell Hart, four volumes, published by the Macmillan Company; "American History Leaflets," Hart and Channing, published by A. Lovell & Co., New York; "Old South Leaflets," published by D. C. Heath & Co.; "American History Studies," published by J. H. Miller, Lincoln, Neb. For the general method, "Guide to the Study of American History," by Channing and Hart, published by Ginn & Co.

To supply the teacher, to whom the above aids are not immediately available, with a distinct idea of the order to which the great masses of events in American history are reducible, the following outline is appended:

A Brief Outline of American History.

(All division of history into epochs or periods is more or less arbitrary. While very useful in helping to fix in mind the salient points of development, there is danger of its being misleading, if it is used without caution. We need to emphasize the essential unity of all history. Each period grows out of the preceding ones, and its character is largely determined by preceding conditions.)

- I. 1492-1600. Period of Discovery, Exploration, and Spanish Conquest.

II. 1600-1763. The Colonial Period: subdivides into —

1. 1600-1688. Period of colonization.
2. 1688-1750. Period of colonial growth and development.
3. 1750-1763. The final struggle between the French and English for the possession of America.
English supremacy established.

III. 1763-1789. The Revolutionary Period. Again we distinguish —

1. 1763-1775. Development of the causes of the Revolution.
2. 1775-1783. The Revolutionary War.
3. 1783-1789. The critical period, — need for a national government ; articles of confederation ; making the Constitution.

IV. 1789-1899. The Constitutional Period.

1. 1789-1801. Supremacy of the Federalists, — organization ; rise of parties ; fall of the Federalists.
2. 1801-1815. Jeffersonian Democracy, — foreign affairs of first importance ; struggle for rights of neutrals ; period culminates in War of 1812.
3. 1815-1845. Thirty years of peace, — chief interest in domestic questions : tariff, internal improvements, national bank. Time of growth ; westward movement ; new states ; Jacksonian type of Democracy. Slavery controversy is developing.

4. 1845-1861. The slavery question the dominant issue.
5. 1861-1865. Civil War.
6. 1865-1899. Reconstruction and reunion.
Progress along many lines.

In order that historical facts may be fully understood and impressed, several distinct aids should be brought into service by the teacher.

Pictures.—For children, nothing that is available will do more to arouse interest, aid the imagination and understanding, and impress facts, than good pictures. These may be pictures of sections of country, towns, famous buildings, monuments, important events, national flags, arms of the states and territories, etc., or of leading men in politics, religion, society, war, education, etc. Collections of such pictures may be made by teachers with but little expense, if they are only on the alert for them.

Related Readings. — These will reveal the inner life of individuals and communities as the picture does the outer. Historical readers, special stories from history, historical novels, poems, orations, debates, and the general literature which reveals the home life, religious and social atmosphere, political upheavals, and traits of character of the times, may all be turned to good account if used as side lights upon the simple record of the text-book.

Geography. — This is essential to an understanding of great movements in history. Whether the subject is exploration, colonization, war, or any other important

sectional movement, the geography must accompany it to render it intelligible. It is important to note that the maps to be studied must be true to the times under discussion. It is a very good plan, in studying, say, a campaign of an army, to have a skeleton map before the class and, as the movements are studied from day to day, have the course traced upon the map. The physical, as well as the political, features of a country must at no time be overlooked when we are considering the correlation of history and geography.

Reviews. — In addition to the material aids mentioned above, it seems important to impress the need of reviews as means of comprehending, as well as remembering, history. The topical plan of recitation should especially characterize the review; style of sentences, arrangement of matter, and choice of details should now be left to the pupil to determine. Leading questions may play an important part in the advanced lessons in history; but in the topical review the child should present his knowledge unaided. Day by day reviews of related matter should be kept up, so that the learner may thus be aided to comprehend the advanced items, and also that he may be able to strengthen his memory by help of the rational associations.

In the review, which is given as a test of knowledge, and not primarily for the sake of impressing a series of facts, the order which was followed in the original presentation may be broken. Items may be called for promiscuously. But in the presentation, and the repetition which is meant to fix the facts, a definite order should be observed until the series is grasped. Every proper

device which will arouse interest, demand the use of historic knowledge, and stimulate to greater mental activity, may be used with propriety in the test exercise.

Philosophy of History.

As historical facts are gathered, opinions concerning them may be formed. When the child has a sufficient fund of historic information, it is wise to have him enter into discussions concerning acts, the motives and character of men, the current and probable outcome of social or political measures, etc. Thus he will, by slow degrees, become advanced in his mastery of the philosophical phase of history. He will learn that history addresses itself to the highest thought as well as to the imagination and the memory. He will see its bearing upon human interests in many avenues. This will naturally open the way to and kindle an interest in the study of civics, ethics, political economy, and all other social sciences. Of course, as separate sciences, these cannot be pursued in the public schools; but the rudiments of them all touch the life of the individual with such force and directness that they must be met and satisfactorily settled.

But, while the ability to philosophize upon historical facts is an important end to be reached in teaching history, it must not be forgotten that, unless it rests upon a solid grounding of facts, it is useless. "Accordingly, the main thing that the teacher of history in the primary school has to do, and largely so in the secondary school, is to teach facts." Resting in these, however, is

to rob the subject of its broadest interests and its best discipline.

If we are once convinced that "the primary necessity in history is to know the truth" (facts), we can safely gather inspiration for our larger work from the words of Guizot : —

"That very portion, indeed, which we are accustomed to hear called the philosophy of history — which consists in showing the relation of events with each other, the chain which connects them, the causes and effects of events — this is history just as much as the description of battles and all the other exterior events which it recounts. Facts of this kind are undoubtedly more difficult to unravel ; the historian is more liable to deceive himself respecting them ; it requires more skill to place them distinctly before the reader ; but this difficulty does not alter their nature : they still continue not a whit the less, for all this, to form an essential part of history."

The only thing for the teacher to remember in this connection is, as Professor Hinsdale states it, that "things must be done in their proper time and according to their just measure."

CHAPTER XVIII.

LITERATURE.

WHILE history presents to us a record of the deeds of men, literature admits us to the inner sanctuary of a soul, and there spreads before us its life of thought and feeling. The intimate relation between these two subjects should always be kept before the teacher's mind. Each will add light to the other. Only in the union of the two can we approach a knowledge of man in his entirety, — the individual with his threefold capacity of intellect, feeling, and will ; and, on the other hand, the society of which he forms a part and which, because of his relation to it, makes him unlike what he would be in isolation.

All this suggests a matter of great moment in the teaching of these subjects ; namely, that they should be closely correlated. One cannot understand much more than the surface effects, if history is presented without reference to the inner springs of men's lives, such as are portrayed in literature ; society becomes too much like an impersonal but mighty force, pushing on blindly to a destiny, if it is considered only in the mass. On the other hand one cannot understand the motives which actuated great literary characters, the occasions which brought forth their epoch-making works, nor the allusions found in such works, unless he has some acquaintance with the history of the times and places in which such men lived and wrote.

Upon this last subject Professor Painter remarks, in his "Introduction to American Literature," that

"literature is influenced or determined by whatever affects the thought and feeling of a people. Among the most potent influences that determine the character of a literature, whether taken in a broad or in a restricted sense, are *race*, *epoch*, and *surroundings*. This fact should be well borne in mind, for it renders a philosophy of literature possible. We cannot fully understand any literature, nor justly estimate it, without an acquaintance with the national traits of the writers, the general character of the age in which they lived, and the physical and social conditions by which they were surrounded."

But, confining our thought for the present within the subject itself, we may ask, How shall literature be taught? The usual process of the schools is somewhat as follows: A book on "Literature" is taken by the pupils; from this they study that a certain man was born at a given time and place, that he lived under such and such circumstances, that when he had reached a certain age he began writing and eventually produced a given lot of works (the titles of his various productions are here recited), and, in most cases, that he died at a specified time and place; finally, they commit to memory and recite certain "choice extracts" or "gems" culled from his writings by the compiler of the text-book on "Literature."

Now, in such an exercise as the above, it is possible that not all the errors which could arise have been made. Still, it is certain that the mass of errors which have been made is sufficient to cause one to reflect with some misgivings upon the thoughtlessness which could

allow them in the name of teaching. The exercise opens with what is not literature; it requires the child to commit to memory a list of statements about a man concerning whom he knows but little, and in whom he has such small interest that he cares less. This is followed by his committing a list of titles, either of books or shorter productions; with this task accomplished, the child is deceived into the belief that he knows the things whose names he can recite in order. Finally, a few dissociated fragments are torn from their setting in the finished productions and given to the child as specimens of what the author could produce. In this act we rob the child of the opportunity of *communing* with a great literary soul; we expect him to get a just appreciation of a man through an acquaintance with a few scraps of his producing; and we do much toward preventing in the child a habit of doing things "decently and in order."

No part of the above exercise is entirely worthless. But in this lies the strongest ground of our criticism. If it were wholly without value, it would be less likely to commend itself to anyone. All of it is worth knowing. Why, then, is it so objectionable? First, because most of it is not literature; and, second, because the little of it that is literature is badly treated.

Having presented the subject negatively and stated what not to do in teaching literature, we have next to consider what steps should be taken in order that this most important subject may be rationally apprehended and enjoyed. In this subject, more than in many others, we need to give the child an intense longing for more and better things than he has yet compassed. Many

subjects present an element of completeness in their nature, and serve as specific guides to an individual in certain lines of activity ; but literature does neither of these, — it is unending and it must be constantly imbibed. Whoever would succeed in teaching this subject must be able to make of the learner one who, with proper discrimination, “is curious to learn, and is never satisfied.”

As a means toward the accomplishment of this end, we must introduce the child to literature itself, and not to biography or masses of minced statements about literature. Accordingly we should take well-chosen productions, suited to the child's maturity and interests, and present these at first hand. At this stage in the work, most of the reading should be done by the teacher. Coupled with it there should come running comments, employed to reveal the beauty, or other feature of merit, in the production.

It should be repeated in this connection that, for the best results to be secured, the teacher should be a clear, easy, and sympathetic reader, — one whose reading will be enjoyed by the children, and will reveal to them the sense and sentiment of what is presented.

Very much more should be read than the child is expected to learn in detail. The aim of this is to get the literary form to sink into his very being. We wish the child to get so thoroughly saturated with the good things in literature that he will become accustomed to such excellence, will feel its merits even though he cannot tell why, and will be dissatisfied with the things that do not contain real merit.

Critical analysis is to form no part of the work at this time. There should be no attempt at analysis beyond the very meager amount which may be necessary as a means of grasping the production in its largeness. The time for a learner to *think* all the elements necessary for the comprehension of a selection is when he wishes to know *what the elements are that can appeal to him with such mysterious force*. Just now the teacher's aim should be to arouse all the feelings of the learner, with but incidental appeals to his judgment, that will enable him to appreciate the excellences of literature.

This result cannot be accomplished by setting a child the task of parsing or analyzing a literary masterpiece; neither can it be done by hacking it to pieces in the attempt to determine its meter, figures of speech, etymology of words, historical or other allusions. Just as one grows to love a person with a deeper and more abiding love, not by analyzing out all his elements, but by living with him and coming into vital touch with his largeness of soul, so does he learn to appreciate and enjoy literature, — by living with it, by having his entire being filled with it, and by having a great soul revealed to him through it.

To accomplish this end, he must be kept in constant touch with the good things in literature that are suited to his nature. He should read them; *very frequently he should hear them*; and it will add greatly to the result if he is made to commit and use very many of them. The teacher should aim to keep the child enveloped in good literature, though he must not be overwhelmed with it as if there were nothing else in life worthy of

his attention. And let us remember that *a passion for a style* may be developed even when elements in the expression are uncomprehended.

But, though such reading as this should be kept up throughout his school life, there comes a time when the learner must begin critical analysis, in order that he may add to the mere appreciation of things a comprehension of them. This will not only enlighten him more fully, but it will enhance his appreciation, and also fix standards of excellence which will make him able to lead others. How, then, shall the teacher proceed when this stage of the work is reached?

In the first place, the meaning of the selection *in its entirety* should be discussed. If the entire selection is too much for a single treatment, then a part should be taken that is complete enough to present a finished picture. In order that this may be done, it is necessary that the learner read the production in its unity first. The comprehension of the parts is impossible unless they are considered in their relation to the main idea. "It should be shown how, in all artistic works of excellence, one main idea rules and sways; that there is one great center towards which all the parts bend and converge; that no part is really isolated and independent, however much it may seem so, but subserves that main idea."

As one means of correlating the composition work and the literature, it would be well to require the learner to write an abstract of the prose selection or the poetry which is under consideration. This will reveal his faithfulness in study, test his comprehension of the selection, and serve as an exercise in the use of English. An-

other helpful device is to encourage all learners to ask questions about any passages they do not understand in their preparation.

Secondly, the selection should be considered in its parts, — the characters represented, the historical details, the manners and customs of the times which are portrayed, the various allusions, the meanings of specially difficult terms, the pictures of single paragraphs or stanzas, etc. Comparison should now be made with other similar productions. The detailed comprehension of allusions and statements of other kinds will require knowledge of the writer ; experiences in his life may have served as the ground of many expressions. This will serve as a sufficient reason for studying biography at this time.

But the child's interest in the writer should grow out of his admiration for the writing. The principal element under consideration at this time is literature, and whatever needs to be brought to the attention for the purpose of casting light upon the literature should be so used ; but it should always be regarded as subordinate to the literature itself. Furthermore, when there are historic references in the literary production that is being studied, these should serve as the occasion of correlating with the literature as much of history as may be required for fixing the time and the national characteristics. This would seem to indicate the wisdom of selecting, as the matter of literary study, such selections as will fit into the period of history that is being studied. The literature can thus bend to the history better than the history can bend to it, because of the more systematic

and necessary order which it is requisite to observe in treating the several parts of history.

In the third place, the selection should be analyzed from a rhetorical and a grammatical point of view. The metrical structure, figures of speech, grammatical analysis of common parts, parsing of words (especially when used with poetic license), study of the derivation and origin of words—these, and other processes which will give added mastery to the learner, should all receive attention.

This does not mean that literary masterpieces are to be used for exercises in grammatical analysis and parsing, but it does mean that the learner's power of analysis and parsing should be turned to account in aiding him to comprehend the masterpiece. Neither should the literature be treated as a means of applying the child's knowledge of rhetoric and prosody. What he knows of these subjects should here be used to bring his literature more completely within his grasp. As one has said: "Prosody is in poetry pretty much what thorough bass is in music. The real student will not be content to hear sweet sounds without inquiring somewhat as to how they are produced. The different measures in poetry are like the various musical instruments. Poetry, too, has its 'trumpet's loud clangour', its flute for dying lovers, and 'warbling lute' to whisper their dirge; its 'sharp violins', its organ notes that 'inspire holy love and wing their heavenly ways' up to the choirs of heaven."

When work like the above has been done for some time, we may safely venture in a modest way upon what

may be called literary criticism. The learner has now reached maturity enough to be able to understand what constitute the features of merit in literary works. These should be pointed out, his attention strongly directed to them, and he be urged to imitate them in his own productions. Such criticism will have a positive effect in improving the learner's appreciation of literature and his own use of language; the negative criticism of mere fault-finding can do neither. A learner should never have his power of literary appreciation blunted by being set to work, as with microscopic vision, to search out the flaws in the workmanship of the great masters.

Such complete analysis of a piece of literature should be followed by a reconstructive act. The selection should now be reread in its entirety; the increased light cast by the study upon the parts which were originally dark will cause the whole to stand out as in the brilliance of the noon-day sun. A careful paraphrase may now be required, and be compared with the earlier one produced in his preparation. Selections worthy of such study should be largely committed to memory and *frequently recited*. The things that will do most to create a literary taste and, at the same time, establish a style of original expression, are wide reading, extensive committing to memory, and reciting.

CHAPTER XIX.

GEOGRAPHY.

MANY of the terms used in discussing methods of teaching geography have been employed in such a variety of senses by different writers that it seems necessary to state at the outset the meaning to be attached to each in the following pages.

Introductory Geography is that portion of geography in the teaching of which we aim to give the learner correct geographical general notions, such as island, mountain, bay, lake, state, county, distance, direction, snow, hail, etc.

Systematic Geography is that portion of geography in the teaching of which we aim to acquaint the learner with the details of the great geographical unit, the earth. In this branch of the subject location plays a very important part; and the things which are here taken up for study are viewed, not as typical of a class, but as worthy of study in their own right.

Home Geography, or *Local Geography*, is that portion of systematic geography which treats of the country within the limits of the learner's home state. This limit is an arbitrary one, some writers including within the term only the geography of the county, while others extend the scope of home geography to the limit of the state.

Foreign Geography is that portion of systematic geog-

raphy which treats of the country that lies beyond the limit of the state in which the child resides.

It must be evident, from what has been said, that the same truths can be taught in introductory geography by a teacher working in America and one working in Australia, provided the two sections of the country furnish similar examples of the things to be taught. But local geography will be one thing for the teacher in America and quite a different thing for the teacher in Australia, — one thing for the teacher in Pennsylvania and a different thing for the teacher in New York.

A little reflection will make it plain that the *inductive method* of procedure is applicable to introductory geography, but not to systematic geography. In the latter the only methods of teaching that have significance are the *analytic* and *synthetic* methods. This is true because induction applies only where generalizations (general notions) are involved. These generalizations appear in introductory geography. Analysis and synthesis complete the processes of thought, or study, when the subject of study embraces only individual things and their parts. The earth is one great unit, and this thing, with all its peculiarities of shape, size, distribution of parts, function of parts, etc., is the thing with which systematic geography has to do.

It now seems clear that the maxim, "Proceed from the known to the related unknown," cannot reasonably be quoted in support of the position that the study of home geography is a suitable preparation for the study of foreign geography; but that it signifies much that is helpful when it is quoted in defense of the practice of

studying introductory geography as a means of preparing the learner for a course in systematic geography, both home and foreign. If this is not at once clear, the following special instance may make it so. Let the child become acquainted with the names, locations, and functions (items emphasized in home geography) of all the rivers, mountains, and cities of his home state. To what extent will this knowledge aid him in becoming familiar with the names, locations, and functions of the rivers, mountains, and cities of any other state or country on the globe? On the other hand, familiarize him with the significance of river, mountain, and city (items emphasized in introductory geography), and you thereby render him capable of understanding whatever he hears or reads about such geographical elements, no matter where they may be located.

To have a child learn what a river is before we ask him to learn the name, location, size, and significance of the Delaware River; to have a child know what island means before we give him the details of Cuba; to have a child, by some rational process, come to know what the word mountain signifies before we aim to familiarize him with the various items of interest connected with Mt. Washington, — this is giving a rational application to the maxim.

Introductory Geography.

In this treatment we shall not aim at being exhaustive, but merely at being suggestive in regard to the matter to be taught. It will be assumed throughout that the teacher is to get the geographical knowledge

from other sources than this work. The main purpose here is to set forth the mode of procedure in teaching geography, and to assign reasons for the same. Since real things in the material world about us constitute the actual reality of introductory geography, the place to go for our material is not to a book from which we can study set definitions, but to the actual things. Our teaching is to be objective, and definitions (word meanings) are to constitute the chief part of the *results* of our study. A book may be of great service to the teacher if it is used as a guide to the things to be sought for in nature; but there should be no book in the hands of the pupils at this stage of the work. To many this may not seem like studying geography, but merely like getting ready to study it. If the study of geography is necessarily associated in their minds with the use of a book, then, to them, it will be better to call this work a preparation for geography, because it is a process of preparation for the intelligent use of a book.

Subjects Treated.

1. *Words* needed in description (broad, deep, flat, high, low, rough, etc.) and in location (across, around, beyond, between, on, over, etc.).

At the very outset we find ourselves confronted with the necessity of employing words in a particular sense that have a variety of meanings attached to them. These words should be taught, not through definitions, but through use.

Illustration. — Direct the child to “tie a string *around*

his waist"; "move the things in the room *around*"; "turn *around*."

He may not be able to *tell* the different meanings attached to the word "around," but he shows that he knows them by the prompt manner in which he performs the given direction. To form a definition of a word is a difficult process, and here our aim is not to give a language exercise, but to acquaint the child with a few essential word-meanings for the purpose of enabling him to use them in the study of geography. Verbal definitions may be committed to memory and the meanings of the words defined utterly escape the learner; hence the direction to teach these words and their meanings through use. "The water flows *around* that rock." "The stream flows *around* my farm." "I have just been walking *around*." All these are expressions in common use, and are such as the child will be called upon to interpret. It is, then, our business to impress upon him the uses to be met in his study of geography.

2. *Ideas of direction.* Both the relative directions (as right, left, front, etc.), which depend upon the positions of our body, and the absolute directions (as north, south, northwest, etc.), which are fixed upon the earth and are not altered by shifting the position of the body, must be taught, and should be carefully compared.

To impress these ideas of direction, some definite line, as the north line, should be fixed, say, by marking it upon the schoolroom floor in such a way that it can remain there permanently. The exact direction of this line may be determined by the use of a compass, and, in addition, children should be taught to determine the

cardinal points and others by reference to the heavens.

With these aids at the command of the children, they should be instructed to note directions of shadows, wind, rain, etc. Lead them to observe the direction *from* which the wind blows and the direction *to* which it blows. Have them tell what was seen in passing to and from school, the store, the post office; the things on the north side of the road, the south, east, or west side, etc.

In order to teach them to compare the relative with the absolute directions, a child may be directed to walk down the room, say to the west, and to name the persons seated on his right, north of him; on his left, south of him. Then, as he retraces his steps, have him name the persons now to his right, north of him; to his left, south of him.

Impress these lessons in direction, and drill the children in them so carefully that when they come to the study of maps, they will readily understand that these maps are simply devices for representing the things which they have been considering in their reality. Note the direction of the apparent movements of the sun, the direction of the roads, the course of streams, etc.

3. *Distance.* In this we should aim at making the child understand, through use, what distance is; and we should also develop within him skill in estimating distances.

Have the child measure things in various units, — inches, feet, or rods; then have him estimate lengths of other things, expressed in the various units, and *after-*

wards measure, to test the correctness of his estimates. Measure the circumference and the diameter of circular objects and of spherical objects. Note the relative lengths of the parts in each. Measure and estimate distances in horizontal planes, in vertical planes, etc. Estimate distances between familiar places from memory.

Let it be remembered that the two things which must be known in order that we may locate a point are its *direction* and its *distance* from some given point. Teach children the difference between locating points with reference to each other, and locating a surface within another surface. The latter is the more important for purposes of geography.

4. *Land and water forms.* First, let these be learned as far as possible by having the child describe the forms he can observe. The stream in the neighborhood may be used, or any low portion of the school ground may serve after a rain. Second, to supplement his observation we may use the molding board, or good pictures. These are put second for the same reason that the use of a book is put after such a course as this, in introductory geography, — we want the child to learn from the outset, and to remember always that geography is about the actual things of this actual world. We do not wish him to study things *about a molding board*, or *about a picture*, until we have made it practically sure that he will consider these only as representatives. Third, we may appeal to the imagination of the child to picture, subject to our verbal description, what we cannot present to him either in reality or through the aids mentioned above. This imaginative work can be success

fully done at this stage, because the child has a fund of correct ideas to work upon, which have been gained at first hand from things.

Much attention should be paid to the child's *verbal description* of the land or water forms which he is able to observe. This is the most direct means of learning whether or not his attention is centered upon the essential or the non-essential elements in the object. The most vital element in a thing is not necessarily the one that will impress a child; but the most striking one will, and often that is the one of no special significance. Another means of discovering the child's thought and observation is by having him make drawings; maps may be introduced later. Such drawings should rarely, if ever, be made by copying pictures, at this stage of the work; they should be made from the objects themselves.

5. *Climate*. Under this heading is included the subjects of rain, snow, hail, dew, fog, temperature, clouds, etc. It is not meant that at this early stage in a child's school life we should give to him an extended course in physical geography, but that we should aim to make intelligible to him in a plain and simple manner some of the primary truths concerning these facts of his daily experience. Scientific definitions should form no part of the subject matter at this time. They have their place in the order of learning, but it is much farther on. Now we want simply to make a few of the easy, but significant, observations upon things. Concerning rain, we might have children try to answer from their own observations questions like the following: Why does the rain fall now in one direction, and at another time in a

different direction? What land and water forms can be found on the ground after a rain? Why does not water run down hill in a straight line as it does down a gutter? About snow we might ask, Are all snowflakes alike? Why does snow last longer in some places than in others? In what different forms have you seen water, etc.? Hail, dew, and fog should be treated in like manner.

Changes of temperature from day to day should be observed and recorded. With this should be taught the use of the thermometer and the reading of it. The attention of the children should be called to the shifting of the clouds from time to time. The distance of the clouds above the earth, their varying accumulations, and the direction of their movements should form a part of this study.

6. *Soil.* In this we should study the different kinds of soil, noting how they feel when rubbed between the fingers, the kinds of plants that will grow in each, etc. This will lead to a very interesting study of plants, fruits, flowers, etc.

In order to make these studies interesting, at the same time that they are being made profitable, we might bring into the schoolroom a large assortment of suitable vessels to be used in cultivating a great variety of plants. These plants should be made subjects of study during their various stages of growth,—the germination of seeds, the breaking forth from earth, the formation of leaves upon the main stalk, etc. An almost endless variety of devices will be thought of by those who interest themselves in such teaching, and this will help

very materially in solving the problem of school decorations, and the other problem of getting children interested in school work.

7. *Record of observations.* In order to impress most firmly upon children the habit of regarding this earth as the subject of study in geography, it is well to have each member of the class keep a daily record of observations.

Suggested plan : Note the date, time of day, weather, direction and approximate force of the wind, temperature, kinds of clouds, and their position.

When pupils have become proficient in keeping a record of such observations, it is an easy step to add a *definite hour of the day* when they shall note the direction of the sunlight, as measured from some fixed object. These observations, kept up for some time, will impress them with the changing positions of the sun from season to season as nothing else will.

8. *Animals.* First study the domestic animals with which the children have some acquaintance. Have them accurately described. Call especial attention to their habits — what they eat and how; their movements in lying down and in getting up; how they move in walking, in running, in trotting; their positions in sleep; their manner of caring for the young, etc. In all of these matters do not *tell* the children much, but put them in the way of finding out.

Have the domestic animals classified, and make lists of those that chew cud, those that have cloven hoofs, those that eat flesh, those whose flesh is used for food of man, those that furnish man food aside from their

own flesh. Which animals furnish beef, pork, veal, mutton, etc.?

Besides considering the domestic animals which are available for study at their homes, teach them the wild animals of the vicinity. As they study the physical structure of animals, have the pupils find where the different animals live, — in the woods, in the ground, in barns and houses, etc. Find out how they build their homes, of what use they are to man, of what injury to man, etc.

This study of animals should include the study of birds and of reptiles. All this work, it must be remembered, will be of a very elementary character, but it will do much to prepare the child for a rational study of systematic geography, in connection with which he will study the animal life peculiar to each country considered, and in a more exhaustive manner.

9. *Occupations.* This opens up another wide field of interesting matter, which can be made to do service in preparing a child to go through the world taking knowledge of his surroundings. He will, thereby, become a person with much information and with varied interests. The most common occupations of the neighborhood will furnish much that is not known and that is worthy of being known.

Have pupils give the names of occupations, the names given to persons engaged in them, the tools, materials, and products. Let those who have seen the work done describe the manner of doing it. If there are factories in the neighborhood where common things, such as baskets, clothespins, bottles, or tacks are made, have such places

visited and the processes studied and described. Where the articles are small enough to permit it, a very good plan is to make collections of manufactured articles, getting specimens in all the different stages of manufacture.

Have them study the work necessary in the preparation of various food products, — flour, butter, cheese, etc.

This study of occupations should form a prominent part of the entire course in geography, because, as the various races and nations of men are studied, the occupations peculiar to each will be necessary, in order that we may understand the service of the people to the rest of mankind.

The order in which the above items should be taught is a matter that will doubtless be questioned by every earnest teacher of the subject. There is no necessary order, growing out of the rational relation of these items to each other, excepting that in a few instances we find that the study of one is made possible only when the learner already possesses a knowledge of another. As an instance of this we may mention that before the child can answer the question, Why does the rain fall in a certain direction? he must know what direction is, and the names to give to the different directions.

The chief things that determine the order of these topics are the interests of the class, the time of year, and the kind of day. The teacher can do much toward determining what shall be the dominant interest of a class, by the choice of subjects in language, reading, and other classes. To plan for the study of snow in June, or of rain in the midst of days of drought, would be a viola-

tion of all rational method too apparent to need warning. Perhaps it cannot be too carefully urged that *a thing should be studied, when possible, before the representative of it is substituted.*

10. *Maps.* Before pupils are prepared to use a book, which forms an essential part of their later study in geography, they must be taught to understand maps and should be taught to draw them. Concerning the interpretation of maps, much confusion is allowed to remain in the mind of the child because the teacher has a mistaken idea that, if a child can understand a common picture, he can, therefore, understand a map. The difference, however, between a picture and a map is just as striking as the difference between a picture of an object and the word which is the name of the object. The lines of a good picture are arranged in two dimensions to look as much as possible like they do in the real object, which has three dimensions. From seeing a picture a child can recognize the reality which the picture represents ; or, from knowing the object, he can immediately know its picture by looking at it. Not so with a map. A dot has no resemblance to a city, which it represents ; a tortuous black line does not look like a river ; and small, irregular, scratch-like lines do not resemble a mountain. In short, the map is made up of *arbitrary characters*, whose meaning should be told plainly and directly to the child.

For introducing maps the following plan is recommended : —

1. Draw a real picture of some place, say the school-house and grounds, if they are not too complicated.

This will contain representations of buildings, trees, fences, etc., which look like the real objects.

2. With the aid of the pupils, decide upon characters which shall be used as signs of buildings, trees, and fences ; then make a second drawing, this time employing the arbitrary signs of things in place of the pictures of the things. ( may be used to represent a house,  to represent a tree, and to represent a fence.)

3. Explain from this what a map is and then drill much in map drawing.

In all of this drawing insist upon preserving *true proportions* — the relative length, width, and height of a building ; relative distances of objects from each other ; relative directions of objects from each other. In the drawing where arbitrary signs are used to represent things, especial care will be needed to maintain correct proportions. Do not try *to give* true concepts by having them draw, but use the drawing *to impress* the concepts they get from actual things or from printed maps. For purposes of geography, this drawing has two distinct values, — it compels the child to observe the reality with greater care in order that he may be able to represent it in all its details, and it impresses the forms more indelibly upon his mind.

When the child has attained a fair degree of skill in drawing maps of sections of the country about him, and of other geographical divisions presented to him, it is a very good thing to have much drawing from memory of the easier forms. The necessity of carrying in memory a complete picture of a form that is being studied,

will force the child to attend with his utmost care to all the details of the form. This added care and the necessity of reproducing in its entirety, without again observing, will do much toward impressing with vigor and clearness whatever is being thus studied.

Frequent opportunity should be given later in the work to draw maps upon the blackboard or other immovable surfaces. This will prevent the shifting of paper, which is so common, in order that all lines may be made with the down stroke or stroke to the right, and will develop skill in drawing lines in every direction.

A careful study of the method of procedure outlined above will reveal the fact that it is inductive. In each case the point of departure is some single thing; this is followed by the study of another and another; comparisons are then made and resulting conclusions reached. Thus it is seen that the highest point attained in this work is about where the books on geography generally begin, — with definitions. When such definitions are thus framed we can have the assurance that they are understood, and we should proceed at once to use them. But let it never be forgotten that when a branch of learning is concerned with things, it is most irrational to begin its study by committing a set of verbal definitions about things.

Systematic Geography.

By systematic geography we mean what might appropriately be called the geography of locations, because each particular thing that is studied is *somewhere*, and its position is an important thing to know concerning it.

In introductory geography each particular thing that was used was taken because it happened to be the one at hand (any other one of the same kind might have done as well); its position was not a matter of any moment; we were not studying it for the sake of learning about it in particular, but we were using it as a means of learning about the class of which it was a member. But now, when we come to systematic geography, we are concerned about the particular things, one after another in themselves, and not as they typify a class. If, in the introductory stage, we used an island it was that we might thereby learn what would apply to islands in general; but now when we study a certain island, say Cuba, it is that we may know it in itself with all its especial attributes of position, size, shape, climate, products, people, etc.

The thing to be studied in systematic geography is plainly, the earth, an individual thing made up of parts. These parts are the portions of land and water which constitute the earth, each with its particular location, size, significance, name, etc. The first problem that confronts us, in the attempt to settle upon the correct method of procedure in teaching this geography, is *where to begin*.

Two opposing theories have been advocated with reference to this matter. One is that we should begin with the neighborhood in which the child resides and proceed synthetically to study the township, county, state, country, hemisphere, and globe. The reasons usually given in support of this method are: (1) It is in accord with the principle (?) "Proceed from the known to the related un-

known." (2) It affords the child an opportunity to become familiar, first, with the geography of his home neighborhood and country. Then, if he is compelled to leave school before he has had time to learn both, he will know the geography of the country where his interests are, rather than of the remote countries in which he has no recognized interests.

The first of these reasons has already been considered and rejected as not applying to the subject matter and method in defense of which it is offered. (See p. 293.) It will be enough to add here that the maxim applies only where the elements of the known and familiar can be recognized as forming constituent parts of the unknown. In any other connection the employment of this maxim is without reason, and results in empty sound, devoid of sense. The study of home geography (the geography of Pennsylvania, Florida, or California—*whatever is home for the learner*) must mean the study of the peculiarities of that district, or it can mean nothing.

The geographical *general concepts* do not form any part of the geography of Pennsylvania, or of any other particular section of this country, any more than they do of the geography of Greece. They require the individual's contact with the realities of the earth for their unfolding; but this contact is as wide as his range of experiences, and is not bound in by anything else. Now these geographical general concepts, learned from the child's environment, are an aid to him in all his subsequent study of geography. But, on the other hand, the facts of local geography, which are the items that are true of the child's home neighborhood, can render no service

whatever in enabling him either to interpret the geography of a distant place or to fix in memory the items peculiar to that place.

In considering the second reason, it seems only necessary to say that, while it is true that the child should know the geography of his home country, and omit that of foreign countries, if he must neglect either, the accomplishment of this end is in no sense dependent upon a synthetic method of procedure. The analytic method does not necessitate the study of the details of foreign geography before the child is given an opportunity of studying the details of home geography. It only proceeds in a way that will render such details capable of being understood.

The second theory is that we should begin our study of systematic geography with the earth in its entirety, and proceed analytically to a consideration of the distribution of land and water upon its surface, the continents, countries, states, etc., to the smallest divisions considered in political geography. When these parts are known in their proper setting upon the earth, then we may proceed to as detailed and thorough a study of each part as the circumstances of the case will warrant.

Several arguments will be given in support of this theory.

1. It is in harmony with the normal mode of mental procedure in the study of single things; that is, in the attempt to know or understand single things. This mode of procedure is claimed to be from wholes or units to the consideration of their several parts. We know a man, a horse, a house, or a piano, first as entire things; we are able

to recognize these things and to give their names ; later, through our desire to know them more fully, we are forced to the necessity of mentally analyzing them. Then, after we have studied the details of their parts, we know the things in their entirety more intimately. We have passed from the "whole of apprehension" by an analytic-synthetic process back to the "whole of comprehension." It does not affect the validity of this position to assert that in the cases cited above the objects are small enough to be perceived in their entirety, while in the case of the earth the unit is too large to be seen at once. In the first place, no solid (object of three dimensions) can be *perceived* at once in its entirety. There is always the other side to it, or the inside. But what is perceived is the index to the entire thing. At this stage our *knowledge* of it is vague ; this knowledge is rendered definite by a mental process of resolution, which must be followed, in order to save us from fragmentary results, by an act of reconstruction. In the next place, the difficulties arising from the immensity of the earth are overcome by the power of the imagination. The whole earth cannot be perceived by any one, but it can be pictured. And in this picturing process of the imagination we can increase or diminish at pleasure, without vitiating results, *provided we retain true proportions*.

2. Geographical location of any portion of the earth is always given in terms of the next larger division. A township is located by telling its position in a county ; a county, in a state ; a state, in a country ; a country in a continent ; a continent, in a hemisphere ; and a hemisphere, on the earth, in a position relative to the other

hemisphere. Now, in the attempt to locate each one of these, it is assumed that the child previously possesses at least some knowledge of the next larger one. If the division is studied without reference to its location, this artificial isolation gives a false notion of its significance. Indeed, location forms one of the most prominent items in systematic geography. This is not meant as a defense of the ancient plan of studying maps blindly, and in this act fancying that we are learning locations. It must be remembered that the locations we are studying are on the earth and not in a book.

3. Taking a division of the earth as the subject of study *before it is seen in its proper setting as a part of the earth*, practically calls upon the child to perform impossibilities. The significance of a geographical division can be understood only by knowing its relation to other divisions. In the process of isolation, which characterizes the synthetic method in geography, we destroy these relations for the child and then ask him to learn their meaning. We put out his eyes and then ask him to see.

With a machine in working order the attention of a mechanic may be directed to any one of its parts, and he may study its position and function with a fair show of success. Give him but one part separated from the rest of the machine, and direct him under these circumstances to study its position in the whole, and its function. You thereby greatly increase the difficulty of his task. If it is a part of a familiar machine, he can approach the task with a likelihood of performing it, because his conception of the whole will serve him in

disposing of the part ; if it is a part of an unfamiliar machine he must approach the task with greater misgiving, though even here his great acquaintance with machines in general might be of service. If this task were imposed upon a novice, he would find it an utter impossibility, unless, indeed, he could invent a machine to fit the part.

Something like this is done whenever we undertake, by the synthetic method, to teach a child anything in geography. Our little division has a river passing through it. This river has never been studied in its entirety. About one-twentieth of it is in the division we are studying. This section, it is assumed, can be studied, and its functions really understood. When such a difficulty is met in actual practice, the teacher ignores his theory, if he has one, and jumps to a sufficiently large portion of the earth to enable him to get at the thing in question in its entirety. From this he works down analytically to the smaller division, where presumably his method would have held him, and then continues in it until another item requires another jump. And all of this is done in the belief that he is consistently pursuing a synthetic method of procedure.

Having thus established the claim that systematic geography should begin with the earth in its entirety, our next inquiry is for the plan of procedure.

Globe. The opening lessons should be given by means of a globe. The first lessons should be devoted to teaching the essential lines upon the globe, so that the child can thereby locate places and tell directions. Mathematical definitions should not be given, but the

facts should be made very plain. Unless the natural inquiries of the children call for it, no attempt to explain the motions of the earth and the consequent changes of the seasons should be made at this time. Such a matter can better be left till the learners are prepared for a more systematic course in physical geography. The distribution of land and water should be impressed. The line through which the sphere is divided in imagination into hemispheres, for convenience of study, should be pointed out. The names of the hemispheres, the divisions of land on each, together with their names, estimated proportions of land and water on each, the representation of directions on the globe — these are among the items that it is important to teach at this time.

Since these are all arbitrary facts which need to be deeply impressed upon the memory, and since there are so many new and arbitrary words to be impressed, it must not be forgotten that *many and varied repetitions* of the same items are necessary. Added interest may be given to the study of location, in considering the great divisions, if the classes are taken over many different imaginative journeys. In these, the countries and the bodies of water passed over should be named by the children, for some time with the globe before them, later from memory. Comparative sizes may be impressed by being worked into problems of various kinds.

Outline Maps. . This work upon the globe should be supplemented by careful work upon an outline map. The globe and map should frequently be compared, in order to make clear to the learners that we are now representing a spherical surface upon a plane. And

both of these should be studied constantly in the light of the real world about us. At the beginning, and for a considerable time, the map should be before the child while he is reciting. We want to be sure that he is getting impressed from the beginning with true mental pictures. If the proper map is not kept before him till a distinct image of the earth's surface is formed, the likelihood is, that he will construct in imagination a picture with many parts in error, and this erroneous picture will be impressed, whenever it is repeated, with just as much force as the true one.

We should not attempt to teach details in this early map study, but should look to the larger elements only. Much interest may be added to the otherwise dull study of the globe and map, by calling attention to the typical productions, animals, and peoples of the different zones. Stories setting forth the different modes of life, dress, and industries of the people in the different countries, may be introduced as supplementary reading. Map drawing, as a means of impressing the forms and giving variety to the study, should be taken up from the beginning.

Text-Book Course.

This preliminary work in systematic geography, done by the aid of globe and outline maps, preceded as it has been by a course in introductory geography, will prepare the child for an intelligent study of the book. When this is taken up, several matters of great importance should be kept in mind.

It may be that the subject matter in a given text-book is not arranged in the best possible order for every

school. If so, let the teacher never hesitate to rearrange it. If the general philosophy of the subject is understood, the teacher can always be trusted to modify the arrangements of details at pleasure.

It may be that the book in use contains many more details than the teacher of a given school will feel justified in presenting. Under such circumstances the teacher must rise above the feeling of bondage to a book, and must select and omit as the conditions of the school seem to demand. No hesitation should be felt for fear children will regard such a selection of matter as a mark of weakness. Rigid adherence to a book more strongly suggests a lack of knowledge than does either a rearrangement of the subject matter or an omission of non-essential parts. Let the teacher of geography *know* geography, and the book will then become his servant, not his master.

Let it never be forgotten that the pictures with which our modern text-books in geography abound are among the very best aids in the teaching of the subject. Aside from travel itself, nothing will serve better than these well-chosen pictures to give to learners correct ideas of places, people, industries, etc. Lessons upon these pictures will break the monotony of the map study, and will tend to render that study increasingly intelligent.

The descriptive text of the geographies should be studied with much care. This text should not be committed to memory verbatim, but it should be recited in the manner found suited to history text or to any other ordinary record of facts. At times it should be read in class and commented upon. At other times it

should be assigned for study, and might even constitute the only subject matter of a lesson.

It will result in a better appreciation of both history and geography if the teacher will observe a proper correlation of these subjects. Let no history of a country be studied without calling definite attention to the places where the events recorded took place. Incidentally, when the geography of an important place is being studied, let references and questions upon the main facts of its history be introduced. The important result to be secured, aside from the deeper impression of both sets of facts through the repetition of them, is the ability and the habit of thinking of historical items when geography is being studied, and of geographical items when history is being studied. Many children know much more geography, when in the geography class, than they ever think of at other times. One cause of this is the faulty method of study by which a child fixes in mind only temporarily the things which are to be recited a few minutes later, and, as the recitation is ended, these items having served their purpose, are put aside much as one would dispose of cast-off garments. A simple remedy for the teacher to apply to this ill, is persistent review. But another cause of the peculiar mental condition stated above is the practice of so sharply dissociating the various subjects of the course that the child is led to think they bear no relation to each other, and hence should not be thought of together. We should strive to remedy this defect by calling upon the child to use in each class any of the related items of knowledge he may possess.

Commercial Geography.

Great interest can be awakened in the subject of geography by introducing much of commercial geography. Nothing can serve better than this to impress upon children the products and industries of various countries. It will also serve to teach them how closely all of civilized mankind is bound together, how the interests of all sections are disturbed by disturbing those of any one prominent section, how each country needs the aid of all the other countries to enable it to enjoy the fruits of the most developed industry, and how division of labor tends to make the members of the human family mutually dependent upon each other.

In this course we should study the imports and the exports of all the prominent countries; the railroad and steamship lines, the canals and caravan routes, over which the products of the world are carried; the seasons of harvest, say of wheat, in the different countries; and all other items of interest growing out of the trade relations of the different countries of the world.

Physical Geography.

To complete the work in geography a full course in physical geography should be given. In this we return to the method of work in introductory geography. The principal aim is, not to learn about distinct individual things as in systematic geography, but to develop a full set of geographical general notions.

Because of the degree of completeness that should

characterize the work at this stage, each pupil should have a book in physical geography. By this time pupils should know how to use a book, and should therefore have it as a means of reviewing, impressing, and otherwise perfecting their knowledge of subjects presented in class.

Actual realities, and not definitions and descriptions from the book, should form the basis of our work here as elsewhere. The book may be used to supplement the work with real things, but it should not supplant it. The method in this, as in all the natural sciences, should be inductive, — leading up from the individual instances presented, to the appropriate generalizations, and then returning to apply these truths in newly discovered instances.

CHAPTER XX.

NATURE STUDY.

BECAUSE of the uniformity in their nature, and the consequent similarity in the methods of teaching them, this term is used, in the present chapter, to cover what is ordinarily meant by nature study (plants, insects, minerals, etc.), and also the study of the human body, as well as any other material sciences of the elementary school which rest upon a foundation of facts, gleaned by observation.

It is not the purpose here to teach the truths in any department of nature study (special books abound in which that is ably done), but merely to present, in line with the general philosophy of this work, a few of the more important items which may either aid or hinder one's success in teaching.

1. Having determined the unit of the branch of nature study that is under consideration, we should aim to present that to the child in its wholeness at the beginning. Selected pieces or badly deformed wholes will cause the child's knowledge to be either fragmentary or entirely wrong. The significance of the several parts can be comprehended when they are taken from their organic relations and analyzed; they are almost incomprehensible when presented as isolated parts.

2. Let the aim be to train the child's power of observation and ability to study nature, rather than to impress

upon him a certain number of facts about nature. To this end he must be led to make the actual observations for himself. Generally the teacher will defeat his purposes if he tells the child what is before him, and then asks him to notice it. This will often lead to the child's merely giving assent to what the teacher announces, without taking the trouble of actually observing it himself. A question that shall elicit from the child a reply which compels observation is much more effective.

It should be noted, further, that the child should be *led* to make observations, not be trusted to make them independently. What he gets without assistance may be of greater worth to him than what he gets under guidance; but this is very questionable. Most of the unaided observations of children are random ones, and they result in many facts, but with little coherency. There is value in an orderly consideration of things, and the teacher's maturity and experience should be turned to the benefit of the child in thus aiding him to follow an order, which experience has taught men, through long years of trial, to be valuable. This must not be construed as a recommendation to do the child's work for him. It merely means that, in addition to the material and the inspiration to use it, the teacher is to train the child into proper habits of study, which will enable him to catch up with the ever-widening field of human achievements, and to comprehend it.

3. If the child's ability to study nature is to be enlarged, we should encourage him to seek for nature's products in the environment in which nature places them. Objects of nature may be brought into the schoolroom

for use, but they can be fully understood only when they are known in connection with their natural habitat. The child should therefore learn, through finding them for himself, in what kinds of places to search for certain plants, animals, or minerals. In this way he can learn many of the habits of living things which could not be revealed in the artificial environment of the schoolroom. As an incentive to such work the children should be encouraged to supply the school with material for study, rather than to have it furnished for them by the teacher.

4. Unless objects are very large, so that the children can surround them and be sure of seeing all the necessary parts plainly, each child should be given an opportunity to handle an object for himself. The ability to handle it with care is worth something, but of more importance in this place is the certainty it gives that he can see all that is required (color, connections of parts, etc.), and that he can learn the many important items revealed to touch alone.

5. In all object study the ability to tell what has been observed forms a very important part. The language training itself is valuable, but more valuable in this connection is the ability to distinguish between what is actually observed and what is thought about that which is observed. Teachers need to remember that, at any given instant, only one fact is observable, and then another, and another. In training the child to tell what he has observed, we should not permit him to say he sees that "birds" do so and so, but rather that "this bird" did thus and so. The former of these is a generalization, and that is never an observable quantity,

6. In leading children to make generalizations, let comparison of individual instances play a very important part. If one specimen is studied as the type of a class, be sure to impress upon the child, in so far as is practicable, the necessity of things being as they are. Otherwise he will pick out the oddities in the specimen before him, and immediately transfer these to the class, much as the German did who wrote in his note-book, "Americans wear their overcoats when they are warm," because he saw an American rush into a cold railway car and then place his overcoat about his shoulders to prevent too sudden cooling.

When such mistaken generalizations are made, the teacher should not tell the child his error, as a general rule, but present another case which clearly disproves the generalization, and help the child to discover his error. It requires only one contrary fact to disprove an entire theory, and the best way to get at this fact is by taking the child directly to the reality from which it can be learned.

7. In all this study of nature the teacher should make the child's acquaintance with the realities of the world about him the occasion for correlating with it suitable literature, composition work, drawing, etc. When these matters are brought to the attention of the learner, side by side with the realities of which they treat, it arouses within him a stronger motive to pursue them, and it emphasizes their worth at the same time that it impresses them with greater force upon his mind.

8. In all nature study children should be taught how to collect specimens so as not to wantonly destroy

things. In the realm of plants, for instance, if they are collecting only flowers or buds or leaves for study, they should be impressed with the idea that it is not right for them to pull up entire plants and throw them away. In many localities the trailing arbutus is being exterminated because of such ruthless treatment. Moreover, the reflex effect of such conduct upon the child is bad ; it tends to make him wasteful, rude, and indifferent to the influences that nature's beauty casts about him.

In the animal realm great care should be exercised to prevent needless suffering to the creatures studied. To this end it is well to refrain from the use of cats, dogs, etc., in the study of animal physiology with children ; animals that are used for food and that have been humanely killed, may be used, — the eye, brain, heart, lungs, etc., of the sheep, calf, or pig.

It is never well to sacrifice to mere learning the elements of our natures that make for tender sympathy, kindness, and a consistent regard for all God's creatures ; and especially so since the learning can be as well secured without any lessening of the other elements.

CHAPTER XXI.

ARITHMETIC.

IN teaching arithmetic the following important matters need to be thoroughly grasped and constantly kept in mind by the teacher : —

1. *Numbers are not "things,"* such as pebbles, sticks, beans, blocks, or balls on a numeral frame. However necessary it may be to use objects in teaching number, it must be clear to any one who will give the matter earnest thought that the objects themselves do not constitute the numbers, but that they are merely the means whereby numbers may be presented.

2. *Numbers are not qualities in things.* They do not inhere in things as the elements do which enable us to know color, form, etc. In respect to these qualities, our sense organs and mind are open to the impressions things are able to make upon us; and, as a result of such immediate impression, we know what is familiarly called "the quality of the thing" which is affecting us. Such knowledge is the direct product of perception. To get the number ideas, however, it is necessary to perform a different kind of mental action from that which is required to give us knowledge of the sense qualities of things.

3. *Numbers are not mental pictures of things.* Doubtless an early tendency on the part of the learner will be to picture things in illustration of numbers, because the

numbers have been taught through the medium of things. But he must be led to see that while this is a concrete illustration of the number, it is only that, and not the number itself. The picture, which he may have in mind of three or four things, carries with it the color, form, position, etc., of the things, as well as the number idea. His attention must be directed to the "three-ness" or "fourness" that is illustrated in the picture; and this can be done only by directing his thought to varieties of things, differing in their qualities, but agreeing in the single matter of number.

4. *Numbers are not identical with figures.* There may come a time, in the more advanced stage of the work, when the learner is entirely justified in manipulating with figures, letters, etc., but that will be when he fully understands what they signify. He will not then think that he has mastered the intricacies of arithmetic, nor that he comprehends its philosophy, when he knows how to "put down the right-hand figure and carry the rest"; how to "borrow one from the next column"; how to "invert the divisor and proceed as in multiplication," etc. He must be led to see that figures are only the written symbols of numbers, just as "cat," "dog," "horse," etc., are the written symbols of the objects for which they stand. It may aid the learner in comprehending this if we show him that, in addition to the arbitrary symbol of number (the figure), there is also another written element which represents the number (strokes, dots, squares, etc.), and which bears a closer resemblance to the number which it represents than the figure does; just as there are other written representa-

tives, besides the words, for the animals above referred to; namely, the pictures of those animals. That figures, instead of being numbers, are arbitrary signs of numbers, and yet a great convenience in arithmetical notation, should be clearly grasped by the teacher.

5. *Counting does not consist in saying names.* It is quite possible that a child may be taught to say, in their order, the names of all the numbers from one to one hundred. This he may be able to do both forward and backward, and yet not be able to count. Further, we cannot be sure that he is able to count even when he can recognize and make the figures whose names (identical with the names of the corresponding numbers) he may be able to pronounce. He is able to count only when he can represent, by means of things, the number whose name is given. This requires a distinct process of mental abstraction, of thinking upon the twoness, threeness, etc., of things, to the disregard of other elements which may crowd upon us in the contemplation of things.

Having stated in this negative way some important items for the teacher of arithmetic to keep in mind, we now proceed to discuss what he shall do, and to intimate how he should do it.

The first thing to do is to give the learner correct number ideas. This is but bringing him into touch with the actual reality of arithmetic at the outset.

The best plan for developing these number ideas is through the use of objects (numeral frame, sticks, blocks, pebbles, beans, etc.). To give no more direction than this would not by any means insure success in teaching.

It is necessary to add further that there must be *variety* in the use of objects. If a teacher finds sticks the most convenient objects to employ in teaching number, he must not forget to have the learners count many other things also. Relying upon any one set of things is likely to cause the child to think that he is studying that thing, whereas the thing is only his instrument of learning. We must also eliminate from our consideration of things in the number class the color, form, size, position, etc., and this can be done only by having him apply the same kind of thought processes to similar things which differ in color, in form, in size, in position, etc.

Further, we should add that, in the use of objects, the teacher should make his use of them *tell the truth*. If, in counting objects, he points first to one, then to another and another, and so on, calling them in turn "one," "two," "three," etc., he is not telling the truth; neither is he telling what he is thinking. He virtually calls the second one "two," the third one "three," etc. This must be overcome by including the first and the second together in our notice and calling them "two"; these taken together with another should then be called "three," etc. The same thought applies to the use of objects in teaching the fundamental operations. The teacher should not present two objects (holding them up) and then three other objects (holding them up apart from the first two) and call the sum five objects (keeping the two and the three still apart). The two objects should be presented and the number given; then the three others should be presented apart from the first,

and this number given; finally the sum should be given only when the two and the three are brought together into one group. This is important in the smaller numbers, because between two objects and three objects the child can perceive (as well as think) a difference in the groups of objects thus used to illustrate the two numbers. So long as this is true, we should make our grouping of objects faithfully illustrate the numbers which we think.

Thus, we should not teach him that two sticks (II) and three sticks (III) make five sticks (II III), but rather that two sticks (II) and three sticks (III) make five sticks (IIIIII).

At this point it may be well to state that the number idea is an *abstract idea*, and that what we call concrete numbers are in reality *things* which have been numbered (counted). It is often claimed that abstract ideas are too difficult for a child six years of age, and that therefore we should not undertake to teach numbers as abstractions, but should teach figures and things instead. To this we reply that, if numbers are abstractions, the only way to teach them truthfully is to teach them as abstractions. This does not mean that we are to teach numbers by what is called the abstract process of teaching. We should teach them by the use of objects (concretely), but we must lead the learner to understand that the thing is not what he is studying, but that it is merely the instrument which enables him to grasp the reality—in this case, the abstract number idea.

Further, figures and things which are used for the purpose of teaching number are only representatives of

numbers, and, as representatives, are significant only when we know the things which they signify ; so figures and things (as used in the number class) are significant only when we have the true number ideas for which they stand.

Finally, instead of this difficulty being an excuse for teaching something else instead of the truth, at the age of six years, it is a very strong argument in favor of putting off the attempt to teach number at all until the child has attained mental maturity enough to enable him to grasp the true ideas with which the subject deals. Indeed, the writer gives it as his personal opinion, based on observation and experiment, that there should be no attempt made to give systematic instruction in numbers to children under eight years of age. It has been found, by taking children just as they appear, without making selection, that the children started in systematic number work at the age of eight years were just as far advanced at the age of ten as were those who began it at six, and continued it until they were ten. In other words, when the child's mind was mature enough to grasp the subject, he did as much in it in two years as another child did in four years, when during much of that time he was too immature to do the work understandingly.

The value of such an adjustment of subjects seems to the writer all the more evident, as we think of the advantage to the child in having all his time, during the first two years of school life, to devote to the acquisition of those arts (reading, spelling, language, writing, and other easy mechanical arts) which shall furnish him the

key to the world's recorded knowledge, and the means of expressing his own, and of those elements of perceptive knowledge secured by contact with the world of things about him.

Assuming, then, that the necessity of giving correct number ideas at the beginning is conceded, we turn to a more complete discussion of the process of counting — the process by which these number ideas are developed and which, when rightly done, opens the way to a complete understanding of many of the so-called distinct processes in arithmetic.

In counting, there are two elements which should be made plain to the learner, — (1) the establishing of a unit, and (2) noting how many times this unit is contained in the given quantity. If I am counting twelve apples, "one at a time," one apple is my unit, and twelve is the number which denotes how many units of this kind are contained in the given quantity (twelve apples). If I am counting twelve apples, by twos, the unit is two apples, and the number which denotes how many units of this kind are contained in the quantity is six. If I count twelve apples, by threes, the unit is three apples, the quantity is twelve apples, and the number is four. Thus it is evident that the unit is not a fixed and unchangeable thing, but a thing which we determine for occasion, or establish.

According to the common system of numeration (the decimal system) we cannot appeal to the learner's reasoning powers to render us much help in the numbers from one to ten inclusive. Each number is made up of the preceding number with one additional unit, and the

names of the numbers, *in their regular order*, must be arbitrarily held in memory. But in everything above ten the understanding should be appealed to constantly. To this end we should adopt what is called the scientific method of counting rather than the common method. By the common method the learner will regard each number as made up (as the numbers below ten are) of the one below it together with one additional unit, and he will call them eleven, twelve, thirteen, . . . twenty, twenty-one, twenty-two, etc. By the scientific method the system of grouping by tens will be revealed, and the names used will keep this plan of grouping before the learner's mind; thus, one ten and one, one ten and two, one ten and three, . . . two tens, two tens and one, two tens and two, etc., to ten tens. By the time this is reached, the subject will offer all the variety that is required to enable the learner to catch the spirit of the decimal notation, without taxing him with numbers that are especially difficult because of their size.

Accordingly, it is urged that the course in number be arranged in three main divisions, kept distinct in the teacher's mind, though their bounds may at times be somewhat overstepped in practice. The first division is with numbers no greater than ten, where all the operations that are performed may easily be performed orally; where objects may be employed to illustrate all operations, and where no attempt will be made to bring into use the merits of the decimal system, because at that point they do not apply.

The second division is with numbers from ten to one hundred, where all the elements of the decimal system of

numeration and notation (excepting the formation and naming of higher groups) may easily be taught ; where the reasons for the processes of naming and writing numbers may still be clearly revealed through the use of objects, and where we still keep within the bounds of rather easily comprehended numbers ; though here the upper limit is fixed at one hundred, simply as a matter of reasonable convenience, while in the first division the upper limit is fixed at ten as a necessity of the system.

The third division is with numbers of all sizes, where the remaining elements of the decimal system are brought out, where the learner can, with greater profit, turn his attention away from a consideration of the different numbers, and devote it with greater energy to the distinct operations with numbers ; where the entire field of arithmetic as a complete science is opened to him, and has begun to engage his thought.

Course from One to Ten.

Throughout the oral work from one to ten the process of teaching each number may be divided into the three following parts :—

1. Introduction of the number by means of objects.
2. Drawing of squares, triangles, or strokes (to illustrate the number), and counting them forward and backward.
3. Application of the child's knowledge of forward and backward counting in reasonable problems.

It may not be necessary to perform these three parts,

in the order given, with each number, but it is likely to be very wise to do so. In the first part we may use any convenient objects; but it will be a wise correlation of subjects if, with their appropriate numbers, we employ such objects as will reveal to the children truths of science at the same time that they are learning numbers. With three we can use the pitch pine (leaves in clusters of three); with five, the white pine (leaves in clusters of five); with seven, the leaf of the horse-chestnut (seven leaflets), etc. These are especially valuable in applying their knowledge of counting to the different objects that may be brought to their notice. Perhaps the most convenient objects to use in the regular work of teaching number are kindergarten sticks, as the combinations and separations are most easily made with them.

Illustration with the number five:—

(It assumes that the child has learned four.)

- | | |
|--------------|---|
| First step. | { With four known, add the one and give
the new name, — five.
Have pupils count the leaves in a cluster
on the white pine.
Have them pluck off one leaf at a time
and count backwards. |
| Second step. | { Let them draw a square, triangle, or
stroke for each leaf, and count.
Let them cross off or erase one square at
a time, and count backwards. |

- Third step. { Let them name and count the school days of a week.
- { How many leaves in a white pine cluster (or flowers [five] on my desk)? How many remain if I take one away? another? etc.
- { I had five apples and gave one away, how many had I left?
- { I had two marbles, my brother gave me one, and my sister gave me another; how many had I then?
- { Two and one are how many? Three and one are how many? etc.

In all of this work, and as far up as the children are able to do it successfully, we should have them learn to recognize *perceptively* the groups of objects illustrative of the various numbers, *without counting them*. This act should follow the act of building up the real number notion by counting.

In all of the above work it should be noted that combinations and separations have been made by *one unit at a time*. We need not hurry to introduce written work in number by means of arithmetical figures. The circumstances of most schools will force us to the use of the figures quite early enough, because with them so large a field of busy work is opened. We should strive, however, to impress thoroughly the true number idea before we use the figures, which are merely the signs of numbers.

Before introducing the figures, teach the children

orally to add to, and take from, a number *a definite group of units* (addition and subtraction).

This will enable you to teach the figures by means of intelligible problems (which have a real and vital interest attached to them), and not merely as ten arbitrary signs to be remembered. The figures may then be taught in the order of their difficulty, and the other arithmetical signs be introduced gradually.

The following order is recommended, the figures first being presented through the medium of suitable concrete problems :—

$$\begin{array}{l} 2 \text{ and } 4 \text{ are } 6. \\ 5 \text{ and } 2 \text{ are } 7. \\ 6 \text{ and } 3 \text{ are } 9. \\ 5 \text{ and } 3 \text{ are } 8. \\ \hline 2 + 4 \text{ are } 6. \\ 5 + 2 = 7, \text{ etc.} \end{array}$$

When all the figures have thus been introduced, have them solve problems in addition and subtraction of a more complex nature than the ones given above ; thus :—

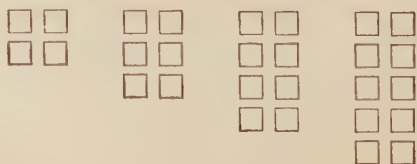
$$\begin{array}{l} 4 + 3 + 2 = ? \\ 8 - 3 - 4 = ? \\ 9 - 2 + 3 - 4 = ? \end{array}$$

Throughout this discussion the writer regards addition and subtraction as the primary and fundamental operations in number. These may then be taught simultaneously (in the oral work), and should be so presented, because in this way the child can learn their relation, and be developing from the start his power of comparison, —

the faculty needed in the mastery of mathematics. Multiplication and division, introduced at the beginning, will not aid the learner, and they may hinder him by confusing him. When the child becomes quite proficient in the work of written addition and subtraction, he may with greatest profit have multiplication and division introduced; multiplication may then be viewed as a special instance of addition, and division be viewed either as a special instance of subtraction, or as the reverse of multiplication. They are in reality only peculiar instances of combinations and separations in numbers, and their peculiarities can best be pointed out after the learners are familiar with the more general processes of combination and separation (addition and subtraction).

Assuming, then, that the learners are quite proficient in the processes of addition and subtraction, the forward counting by twos (multiplication) may be commenced; then by threes, fours, fives. Work in addition and subtraction should be extended. As a general guide, let it be understood that all operations taught in the past will be continued as future ones are presented.

To introduce this step of counting by twos, objects may be necessary; if so, let it pass through the three parts indicated above for the early oral work. In expressing it upon the board (second part) we might use squares as follows:—



Regarding these first as problems in addition, we may bring out that —

$$\begin{array}{ll} 2 + 2 = ? & 2 + 2 + 2 + 2 = ? \\ 2 + 2 + 2 = ? & 2 + 2 + 2 + 2 + 2 = ? \end{array}$$

Then teach the corresponding operations in multiplication; namely, —

$$2 \text{ twos} = ? \quad 3 \text{ twos} = ? \quad 4 \text{ twos} = ? \quad 5 \text{ twos} = ?$$

From this it is easy to impress the different parallel expressions, —

$$\begin{array}{l} 2 \text{ twos} = 4; \quad 2 \text{ times } 2 = 4; \quad 2 \text{ multiplied by } 2 = 4. \\ 3 \text{ twos} = 6; \quad 3 \text{ times } 2 = 6; \quad 2 \text{ multiplied by } 3 = 6. \end{array}$$

This work may be done through the medium of concrete problems in which the learners will be required to make successive additions of twos (or threes), and also to note the number of times two is taken.

Illustration. — If John has two cents and his father gives him two cents more, how many cents does John have? $2 + 2 = 4$.

If a boy spends two cents each time he goes to the store, and he goes to the store three times, how many cents will he spend in all? $2 \times 3 = 6$.

Numerous concrete problems are recommended for little people, because through them we can exercise the child's number knowledge upon matters which constitute his natural interests. Number work is thus robbed of much of its unnecessary drudgery, and, with his interest aroused, we can drill the child to better purpose through

the medium of abstract problems. This will afford a profitable saving of time and energy.

In order to render this learning act as simple as possible, it is generally thought best to confine the learner's effort to one "line of tables" at a time. In making clear to him the nature of multiplication as a process, this will not be necessary; but, when an effort is made to systematize his knowledge of multiplication, the "two line" of tables should be learned first (up to the limit of the numbers with which work is being done — in this case, five twos, and then he should take up the work by threes, fours, and fives.

The material of multiplication within the limit of ten is contained in the following:—

$$2 \times 2$$

$$3 \times 2$$

$$4 \times 2$$

$$5 \times 2$$

$$2 \times 3$$

$$3 \times 3$$

$$2 \times 4$$

$$2 \times 5$$

After this forward counting by groups of units (twos, threes, etc.) has become well fixed, we should begin the backward counting by the same groups (division).

Problem to show the need and the meaning of division:

A boy wrote letters on eight sheets of paper; he used 2 sheets for each letter. How many letters did he write?

Solution. — When he wrote one letter he had left 8 sheets — 2 sheets = 6 sheets.

When he wrote two letters he had left 6 sheets — 2 sheets = 4 sheets.

When he wrote three letters he had left 4 sheets — 2 sheets = 2 sheets.

When he wrote four letters he had left 2 sheets — 2 sheets = 0 sheets.

Answer, 4 letters.

Lead the children to see the reason for subtracting two each time, to see that the number of times two is subtracted is the same as the number of letters that can be written, and to know that numerically this is the same as the number of twos in eight. By so doing we make use of their knowledge of subtraction, and also that of multiplication in the effort to make them understand division. A very good general rule in teaching is to give a learner many-sided views of a thing, by showing him how it stands related to various things he already knows. No confusion need result if only these different relations are approached one at a time.

We must never make the mistake of thinking that because arithmetic makes its chief appeal to the reasoning powers of a learner, its operations need not, therefore, be often repeated, if only they are once understood. These truths need to be impressed upon the memory also, and we need to increase our skill in the use of them. These two ends can be accomplished only by *frequent use*, and we should therefore have very many problems worked. For this purpose, most of the problems used should be relatively simple; problems that are so complicated as to be difficult for the child to unravel should be given as a means of strengthening his power of thought, but not for the purpose of impressing, or fully clearing up, an arithmetical truth.

Course with Numbers above Ten.

The work of this course should be kept chiefly within the limit of one hundred ; since, within that range, we can best illustrate objectively when necessary, and we can emphasize the elements of the system without dissipating the learner's energies in handling large, and therefore difficult, numbers.

The first thing to be done in this stage of the work is to acquaint the learner with the plan of "grouping," whenever ten is reached. This can be done by merely grouping the sticks that have been used in number teaching, and at the same time telling the child that we find it most convenient, for our future work, to put into groups things that are being counted whenever we get *ten* things, and to call the number "a ten." Then have him count orally the objects which you handle before him ; as, one ten and one, one ten and two, etc. ; two tens and one, two tens and two, etc.

When this truth of number is grasped so that the child can count objects readily by the above scientific method, he should be shown how to write the numbers he has just been giving orally.

In the first course in number, the positions of the figures had no significance. Each figure stood arbitrarily for a given number, and all the child could do was to remember the facts. In this stage of the work we must make clear to him that those ten characters are all he will ever need to learn ; but that they must have different meanings attached to them when they occur in different positions.

This "place value" of figures can probably be shown best by writing upon the board a few of the numbers of one figure each, as,—

5
6
7
8
9

Now, with the objects in hand, arranged as a ten and two, hold these against the board and just below the column of figures—the ten to the left of the column, and the two in line with the column. Then, getting the children to tell you the figure which represents the ten, and the figure which represents the two, place them upon the board in their proper positions, as,

5
6
7
8
9
12

This makes plain the place value of figures, provided there is a column of them to show the place. Suppose now we wish to represent simply a ten without any extra units. The child can easily be led to see that it should go under the 1, as,—

5
6
7

8
9
12
1

He has yet one important item to learn ; namely, how to represent this place value when we wish to write a ten without the presence of any other numbers. For this, we erase all but the last from the board leaving simply 1.

What did we express when we put this upon the board ? A ten. In which place (or column) did we put it, in representing a ten ? The second. Now, since all else is erased from the board, which place does it occupy ? The first, because there is but one place indicated. If you should see this in a book what would you take it to mean ? One unit. Now, in order to have it represent a ten, we must get it into the second place ; this can be done only by filling the first place with a figure (0) which means "not any," and which is called a cipher, as 10.

Now read the following :—

13
16
15
10
17
20
26
30
14
etc.

It is believed that some such device as that given above is better than the plan of simply stating to the child the truths involved. This plan insures his *thinking with you* through the process, and thus realizing the need of the cipher, to indicate the place value of other figures, at times when we have no occasion for significant figures in such places; the statement *permits* him to do such thinking, but it does not *require* him to do it.

It is important now that he should learn how to write and name *in order* all the numbers from 1 to 100. Most of this he can do for himself. Write *with him* the following, putting them in columns:—

1	7	13	19
2	8	14	20
3	9	15	21
4	10	16	22
5	11	17	23
6	12	18	24

Call to his attention the system upon which these are made, emphasizing the fact that each time he gets ten he puts them together, thus making a new ten, and then let him make the rest as far up as he can go. Any child of average intelligence, if he has been wisely taught the basic elements, can make the remainder of the set up to and including 99. He may not discover how to write 100, but it will take only a hint. After that, there is nothing more to learn in writing numbers excepting the higher groups, which, with their names and their places in the written order, should be introduced one by one.

There is no hurry for this, however, and they had better not be taken up until the child is familiar with the four "fundamental operations," done in writing, upon numbers requiring not more than the three columns.

At this stage, written work should predominate over oral work, the latter being employed generally as a means of introducing the several steps. It is evident that when written work is being done, the various operations (addition and subtraction, or multiplication and division) cannot be presented simultaneously. Now we must turn our attention away from the study of a certain number, upon which the various operations may be employed, and direct it to the operations themselves, regarded as systems of treating all numbers. Accordingly, in this stage of predominating written work, we should teach addition, then subtraction, multiplication, division, fractions, etc., as so many distinct systems of operations with numbers. At no stage of the work should we fail to point out the relations of the several systems of operations to each other.

The one difficulty in written addition, that of "carrying to the next column," can be made very plain by means of objects. Make combinations that exceed ten and then repeat these in parallel written problems. With his previous knowledge of writing numbers, and his mastery of the law of putting units into groups, whenever he gets ten units, the pupil should be able to comprehend the law of putting down the right-hand figure under the column that is being added, and carrying the remaining ones to the next column to be added to it. The teacher must make clear to himself that this mode

of procedure does not cause him to add the quantity in question twice. We seem to add the first column and thus get the quantity to carry, then we add this quantity to the second column; is it thereby added twice?

Problems in written addition should be graduated so as to introduce but one difficulty at a time; thus:—

$$\begin{array}{r} 4 \quad 8 \quad 23 \quad 17 \\ 3 \quad 4 \quad 42 \quad 49 \\ \hline \end{array}$$

Note that each one of these has in it a difficulty that does not appear in the one before it; note also that all the difficulties of written addition (excepting those which arise from the unwieldy size of numbers) are here represented.

Children should have much practice work in written addition. When we have thus secured accuracy in their operations, we should drill them to secure rapidity. The following devices are recommended for rapid addition: columns of figures to be added upwards or downwards, the speed to be determined by the teacher in pointing; abstract problems on cards, to be presented momentarily to the class, and answers to be given as soon as possible; figures in various designs so you can skip about, as

$$\begin{array}{r} 6 \quad 8 \quad 4 \\ 5 \quad 5 \quad 7, \text{ the understanding being that each number} \\ 9 \quad 2 \quad 3 \end{array}$$

pointed to is to be added to the five; counting by twos, threes, fours, etc., making as many different series of sums with each as possible, thus:—

$$\begin{array}{l}
 2 \quad \left\{ \begin{array}{l} 1, 3, 5, 7, 9, 11, 13, 15, 17 \\ 2, 4, 6, 8, 10, 12, 14, 16, 18, \text{etc.} \end{array} \right. \\
 3 \quad \left\{ \begin{array}{l} 1, 4, 7, 10, 13, 16, 19, 22, 25, \\ 2, 5, 8, 11, 14, 17, 20, 23, 26, \\ 3, 6, 9, 12, 15, 18, 21, 24, 27, \text{etc.} \end{array} \right.
 \end{array}$$

Notice, in this last exercise, that there are as many series of sums possible on each base as there are units in the base. This will reveal the amount of work possible for drill exercises. Notice further that the one series which pupils use most frequently (the one which starts with the *base*) is the only one that is of no especial value in this exercise, as it is the one that appears as the products of the different lines of the multiplication table. In all these exercises for speed let the effort be intense, of short duration, and regularly done. Increase the speed gradually.

Work in written subtraction can be introduced, if need be, by the aid of objects. The one difficulty here is that of "borrowing." (The wisdom of using the term "borrow" will not be called in question here; it is a term that those who read will understand, and for that reason it is used.) Suppose we take sticks illustrating a ten and two; from these we wish to subtract seven. The child will readily see that the seven cannot be taken from the two; we must therefore open the bundle of ten and, treating them now as units, we have twelve. (This last is a term that pupils long ago became familiar with, as the common form of expression is supposed to have been introduced when it became evident that the ideas, distinctly stated by the scientific form of expres-

sion, were impressed.) From the twelve we now take the seven, and we have five remaining. Representing this process now in figures, we can lead him to see that we had to "borrow" the one from the tens column and treat it in the units column as ten.

Graduated problems in written subtraction are as follows:—

8	26	42	50	203
3	13	18	24	47

Drill in rapid work.

Give frequent exercises in concrete problems, *having pupils make many of the problems*. In this work demand problems about things *as they are*. This will afford an opportunity for impressing numerous useful facts. For example, do not let a child speak of selling corn by the ounce, carpet by the square inch, or either of them at preposterous rates. When they reach that stage of the work it is a wise thing to have pupils consult the daily papers for the quotations of goods that are on the market, and to construct their problems upon that basis. The same may be done later on with stocks, exchange, etc.

When written multiplication is to be taken up, the child must know the multiplication table. This he should *make* for himself after having been shown the plan, subject to which it is constructed. Such items as stopping each line at 12, and the entire table at 12 x 12, he must be told. The table should be committed to memory, after it is thus made, so that the child can say it forward and backward, or promiscuously.

In written multiplication the following is offered as a graduated set of problems showing the different elements of difficulty :

4	9	23	86	40	403	407	284
2	3	2	4	8	26	30	203

Notice the elements of difficulty that are in multiplicand, multiplier, and product, in each of the above problems.

One more point it is important to notice in written multiplication. In addition we give, as a general guide in setting down numbers to be added, that units of the same order shall be placed in the same column; this brings the numbers to be added into a straight column on the right, the units column; as

$$\begin{array}{r}
 482 \\
 71 \\
 5296 \\
 3 \\
 427 \\
 \hline
 \end{array}$$

When we come to setting down the partial products in multiplication, for the purpose of adding them, it looks as if we violate the above general law for addition. Let the teacher see clearly why this is, and be ready to make this apparent error intelligible to the child.

Written division is the great stumbling-block in these earlier stages of arithmetical work. It is the writer's

belief that this serious difficulty can be escaped, if we will attend to impressing fully the previous difficulties, *one at a time*, and then present the matter in a different order from that which is usually followed.

Written division is generally taught first as "short division." This is doubtless due to the belief that it is simpler, because the expression of it in the written form is not so complicated as the other; but that apparent advantage is very much reduced when we remember that the written expression does not represent all the steps in the necessary mental operations. "Long division" should be taught first, therefore, and the abbreviated form should be taken up later.

When the various operations upon fractions are being taught, a very excellent device for aiding the learner's understanding is the diagram, or the folded or cut paper. Great importance attaches here, as in arithmetical operations generally, to having the *base* clearly before the learner's mind.

In denominate numbers the child should be led to see that the operations performed upon them are *identical in character* with the corresponding operations upon abstract numbers. In addition, for instance, we do just the same work originally in dealing with abstract numbers as we do in dealing with denominate numbers. The varying units of one denomination that are required to make one unit of the next higher denomination account for all the apparent increase of complexity in addition of denominate numbers.

Indeed, if we would express all the elements which we think in the two cases, they would look alike; as, —

	10	10	10
Thousands,	Hundreds,	Tens,	Units.
1	4	3	7
2	7	9	4
	5 1-2	3	12
Rods,	Yards,	Feet,	Inches.
1	4	2	5
8	3	2	9

In abstract numbers we are enabled to abbreviate the process and say simply, "Put down the right-hand figure and carry the rest to the next column," because of the following conditions :—

In reducing from one denomination to another our divisor is always ten.

This always gives us a quotient (the part that we carry to the next column), which is expressed by all the figures of the given number excepting the last right-hand one, and a remainder (the part which is set down under the column being added), which is expressed by this last right-hand figure.

Teachers have become so accustomed to this shortened form that they seem to have overlooked the fact that it is an abbreviation.

One other item needs attention in order that teachers may appreciate the true spirit of teaching in arithmetic, as in all the mathematics. It is the study of rules. Whether or not they should be committed to memory, and whether or not we should ever work by rule, are fruitful subjects of debate.

That the rules should be thoroughly comprehended admits of no question. It seems equally clear that unless the learner's ability to express their truth in concise and exact language is great, they should, after they are comprehended, be committed to memory. And furthermore, it seems evident that if learners need training in exact and pointed language, nothing will help more in this, provided they think, than filling the memory with excellent models of such language, in which the mathematical sciences abound.

Concerning the question of whether or not we should work by rule, it might be said that the rule was made for that very purpose. No one will seriously argue that pupils should blindly apply rules they do not understand. But when understood, one of the very missions of the rule is to save the student from the necessity of repeating all the longer thought processes with each new problem.

In regard to comprehending the rules of arithmetic, it is given as the writer's opinion that very much more effort should be directed to this end than is usually the case. Just as pupils should discuss the theory of a case in physics (and solve problems as a means of proving that they understand it), so should they discuss the rules and principles in arithmetic. It is understood that the rule is a set of directions for the performance of operations; but it is also remembered that there are distinct reasons for all such directions.

The discussion of a rule (or principle), not the recitation of its language, should frequently constitute the entire work of a recitation. Many workers seem to

think that a learner knows a case in arithmetic only when he can solve all the problems that are given under it. They take this as evidence that he comprehends the principles and rules. It would be nearer the truth to assert that he is master of a case in arithmetic when he can give a masterly discussion of the principles and rules involved in it, even if he can occasionally be puzzled by some of its problems. The problems constitute occasions for applying the truth thus learned and, though students should be able to solve all ordinary problems of a case, they might fairly be regarded as excellent students of the subject, and yet be puzzled with problems involving new and untried conditions, which are likely to continue to the end of time.

CHAPTER XXII.

SPECIAL ARTS.

THERE are several of the special art subjects which still need brief consideration. They are subjects which, in the main, do not submit to the processes of teaching required in the case of a body of truth that is to be comprehended; they demand rather the employment of such devices as will develop within the body a certain form of skill. In this work much will be gained by presenting the elements of the several subjects in the best order, as established by experience and the consideration of their psychology.

The subjects to be treated are writing, drawing, and vocal music, — subjects which in the very best schools are treated by specialists, but which in all schools must be done as well as possible by the teachers provided.

Writing.

Without entering into an exhaustive discussion of the merits of the several systems of penmanship, the author gives it as his opinion that the vertical system is to be preferred, and for the following reasons : —

1. The tendency on the part of children is toward the vertical script; and business men, when they get beyond the influence of the school where they were taught the slant, tend to revert to the vertical.

2. The vertical letters more nearly resemble the printed ones, and are more legible.

3. Vertical writing may be acquired in less time than the slant.

4. There are no hygienic arguments against it.

5. The International Congress of Hygiene favored it in 1891 by a unanimous vote.

In the writing class two things are to be accomplished. We must get a good product; and we must educate the child to produce it in a good way. To secure these ends the following considerations are offered:—

1. Let the child *begin* the art of writing *upon the blackboard*. The object of this is to enable him to make the letters very large (even a foot high), and with a swinging movement of the entire arm. This will result in his writing a full, round hand when he writes upon paper. The one-space letters may with profit be made an inch high when the child first writes upon paper. These should gradually be reduced in size until he writes a plain hand of convenient size. In this way we can prevent the cramped writing, so common among school children, which usually results from finger movements.

2. In presenting, upon board or paper, the model for the child to follow, the teacher should generally *make it before the class*. This will enable the children to see how it is to be done, at the same time that they see what is to be done. Only after this is learned should the model be presented ready-made.

3. In practice it is well to have the child first trace (not with painful exactness, but with a free movement) the letters that the teacher has made. This will enable

him to get the movement required for making the letter and to do it with the least number of disturbing elements. When this has been accomplished he may work with the teacher's model before him or in obedience to the model held in his own mind.

4. The best position for the child, when writing at a desk, is to sit facing the desk, with both feet resting easily upon the floor, both arms upon the desk (about two thirds of the forearm should be upon the desk) and the paper straight before him with its center about on the median line of the body. This prevents the lifting of the shoulders, the twisting of the head, or any condition that might produce such injuries to the eye or spine as are usually attributed to the writing class.

5. Do not insist too rigidly upon having all children hold the pen or pencil alike. Differences in the formation of the hand are as striking as in any other portion of the body. A very good plan is to have the child stand or sit with the hands dropped to the side of the body; the hand will then be slightly curved with the concave part toward the body. Now raise the hand, bending the arm at the elbow, and, when above the desk top, place the pencil within its grasp. The concave part will be directed toward the left, and in writing the hand will rest on the end and side of the little finger. The tendency to "writer's cramp" will be greatly reduced if this freedom is allowed, and the writing itself will be smooth in consequence.

6. In this, as in every art, secure accuracy and neatness first; then labor to increase the speed. Good habits in these particulars can be secured only upon

condition that teachers insist upon good writing whenever writing is done. The child can undo more of habit in a day by slovenly written work in other classes than he can remedy in a week in the writing class.

Drawing.

In this work also there are two distinct ends to be secured, — (1) muscle control in the form of skill, and (2) the ability to make pictures.

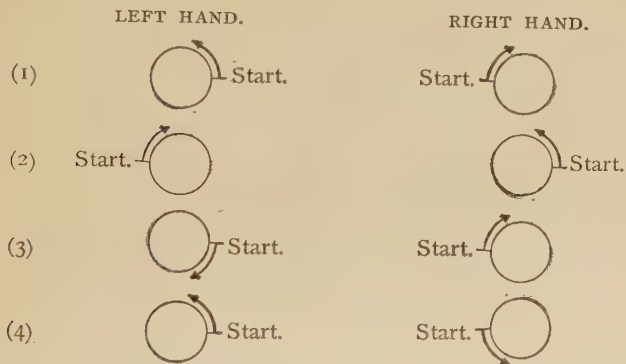
The first of these will require drill exercises wherein the mind of the learner should be directed, not to the objective product that is being secured, but to the reflex effect that the exercise is producing upon his muscles. When he can begin to realize that his ability to do the thing required is growing from day to day, we may be sure that he is making substantial progress.

This drill should not be long continued at any one time, but should be intense and exacting while it lasts. The exercises should be carefully graded, beginning with easy, swinging movements, required for making circles toward the right and toward the left, and continuing up through the spiral, scroll, etc., each time using in the next higher step the elements of power that have been developed in the step below.

Power is greatly increased, time is saved, and more complete symmetry is secured if this drill exercise calls into play both hands, instead of only the writing hand. The work may be done with one hand; the product then matched with the other hand. Later, the two hands may be employed simultaneously. The first movements may be uniform ones, — upward and out-

ward together, or upward and inward together; then may come movements in opposite directions, etc.

Illustration. —



When we are laboring at the second part of this work — the production of pictures — we should *at the outset* undertake to represent solids (the three dimensions) on the plane surface. All the contending schools seem at last united upon this point; namely, that we should not start by teaching a child to draw lines, then have him draw surfaces, and finally reach the representation of real things in three dimensions.

The one aim of drawing is to make in two dimensions that which will look like the real thing which has three dimensions. To this task, therefore, we should betake ourselves at once. The need of lines and surfaces, as the means whereby this can be done, will thus be revealed to the learner. In this way he will get an intelligent appreciation of them from the start. As letters have no language significance excepting as the parts of

words, so lines have no significance for the student of drawing excepting as the parts of solids, which are the realities he is endeavoring to represent. In like manner, as letters are most intelligently learned through the medium of significant words in which they are found, so may lines be most intelligently learned through the medium of the solids in which they are found.

But while the different schools of drawing are agreed upon this point, they are not agreed as to whether these solids should be the type solids (cubes, spheres, cylinders, etc.) or the common objects of the material world which closely approximate these type forms (boxes, oranges, stovepipes, etc.).

The writer gives it as his opinion that the earliest work should be done from the simpler common objects, because of the greater interest children have in them, and because the type forms are representatives of highly developed notions which can best be reached by proceeding from the "vague to the definite."

The work in color can be arranged according to the requirements of the seasons. Autumn leaves may be taken in their season; corn ears, and other farm products, in theirs; and the various flowers, in theirs. This will afford an opportunity for proper correlation of subjects, and arouse a natural interest in the subject directly in hand.

Vocal Music.

It is believed that the greatest good can be accomplished in this connection by quoting at length the report of the United States Commission of Education for

1895-96, showing what experience in German schools has established. Dr. G. A. Lindner, in his "Cyclopedia of Education," says: "Concerning the method and the course of study for lessons in singing, in the public schools, the following points may be considered to have found general approbation in Germany. During the first two years of school, singing is practiced by rote. The chief object here is the development of the voice and the musical ear; later on instruction is based upon the foundation of reading music. It is generally conceded best to confine the children's knowledge to one key, making the *do* movable as the occasion requires. In German schools a number of popular songs of interest to children, both with reference to text and melody, are firmly memorized and frequently practiced. Above all, it has been found necessary to begin the singing of pleasant, catchy airs quite early, so that the musical ear be trained.

"A second higher step in the singing lesson is singing from notes. The pupil is introduced into the laws and symbols of the art of music. A song which he has learned by rote is analyzed into its elements, and the elements thus obtained are reduced to the scale, sharps and flats are introduced, and the various keys developed. Instruction in singing from notes should not be neglected, because the subsequent musical training of the pupil makes it very desirable that he have knowledge of music."

Prof. J. Helm says: "A tone in itself is no more calculated to arouse a child's interest than a separate letter or single sound. Pleasure is involuntarily excited by a natural and, at the same time, technical combination of

tones only. Interest is aroused by the concrete; the abstract in itself is not interesting. Consequently the elements of melody, dynamics, rhythm, and probably, musical notation, are of direct interest to the pupil only when they rest upon a concrete foundation of songs. For this reason the technical course (in vocal music) should depend upon songs, and, with a few incidental exceptions, the systematic instruction of singing should ever proceed from songs and lead back to them."

Based upon the eminent authorities just quoted, we may offer the following recommendations to the teacher of vocal music:—

1. Teach the children, by rote, a large number of bright and catchy airs suited to their development.
2. Have these tunes, together with their words, committed to memory, and sung as frequently as the interest of the pupils will allow.
3. Revealing through these the meaning and use of the musical scale, let this now occupy the learner's attention.
4. Remember that in this musical instruction there are two distinct things to be aimed at, —the training of the ear, and, afterwards, the training of the voice. In order that the first of these may be secured, it is very important that the teacher sing, or play a musical instrument, and thus afford his pupils an opportunity to hear the tones which they are to sing. But the ability to recognize a series of tones does not imply the ability to reproduce them; it is necessary, therefore, that the children should make the tones when unaided by the teacher.
5. Teachers should not ordinarily "lead" their classes

in singing. If they do, the children will learn to depend upon such aid, and will spend energy in watching for what the leader is going to do next, when they should be using it in doing the next thing for themselves.

6. Do not urge children to loud singing. Let the aim be to make melody, and the greater volume will come with advancing years. Many voices, that might with care have been made musical for mature life, have been ruined by the strain forced upon them in childhood. The excellence of the singing lesson is not to be measured by the amount of noise the class can make; neither does that child sing best who can be heard above all the others in the class.

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